DECpc AXP 150 and DEC 2000 Model 300 AXP

Customer Technical Information

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This manual describes how to use the system firmware and how to test, troubleshoot, and upgrade the DECpc AXP 150 and DEC 2000 Model 300 AXP systems.

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

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Preface

Purpose of This Manual

This manual describes how to upgrade and test the DECpc™ AXP™ 150 and DEC™ 2000 Model 300 AXP systems. It contains information on using the system firmware, troubleshooting, running diagnostics and working with option boards, internal SCSI devices, memory, and the nonvolatile random-access memory (NVR) battery. It also includes information on system specifications and connector port pin specifications.

Audience

This manual is intended for people with some experience of using or upgrading computer systems. If you do not have sufficient experience to complete the tasks described in this document, ask your system manager for help or contact your Digital™ service representative.

Structure of This Manual

This manual is divided into twelve chapters, five appendixes, and an index:

- Chapter 1 describes how to use the system firmware.
- Chapter 2 describes how to use the Windows NT™ firmware menu items.
- Chapter 3 describes how to manage the Windows NT boot selections.
- Chapter 4 describes how to use the EISA configuration utility.
- Chapter 5 describes how to use the OpenVMS™ and OSF/1® console commands and utilities.
- Chapter 6 describes how to troubleshoot the system.
- Chapter 7 describes how to run diagnostics.

- Chapter 8 describes how to report problems to your Digital service representative and connect terminators, if requested to do so.
- Chapter 9 describes how to remove system unit covers, remove or install the system unit feet, and how to reassemble the system.
- Chapter 10 describes how to install, move, or remove option boards.
- Chapter 11 describes how to install or remove internal storage devices.
- Chapter 12 describes how to install or remove the NVR battery or memory options.
- Appendix A describes how to set jumpers and switches on the internal storage devices.
- Appendix B describes the precautions that you must take when handling internal system components.
- Appendix C describes how to use the fail-safe booter to recover the system firmware.
- Appendix D lists the system unit connector pin specifications.
- Appendix E lists the system hardware specifications.

Additional Information

See the *DECpc AXP 150 and DEC 2000 Model 300 AXP User Information* manual for the list of associated and related documents.

Conventions

The following conventions are used in this manual:

Convention	Description
Ctrl/*x*	Ctrl/*x* indicates that you hold down the Ctrl key while you press another key (indicated here by *x*).
MONOSPACE	Text displayed on the screen and menu item names are shown in monospace type.
boldface type	Boldface type in examples indicates user input.
italic type	Italic type emphasizes important information and indicates complete titles of manuals.
nn nnn.nnn nn	A space character separates digits in numerals with 5 or more digits. For example, *10 000* equals *ten thousand*.
n.nn	A period in numerals signals the decimal point indicator. For example, *1.75* equals *one and three-fourths*.
UPPERCASE	Words in uppercase indicate a command, file name, or environment variable name.
n	A lowercase italic *n* indicates the generic use of a number. For example, 19*nn* indicates a 4-digit number in which the last 2 digits are unknown.
x	A lowercase italic *x* indicates the generic use of a letter. For example, *xxx* indicates any combination of three alphabetic characters.
Note	A note contains information of special importance to the reader.
Caution	A caution contains information to prevent damage to the equipment.
Warning	A warning contains information to prevent personal injury.

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Using the System Firmware

Introduction

This chapter describes how to use the system firmware. The system firmware consists of two components: the OpenVMS and OSF/1 console and the Windows NT firmware.

These two components are supplied both on the DECpc AXP 150 system and on the DEC 2000 Model 300 AXP system. These systems use both components to complete different tasks. This chapter describes the system firmware, describes how to switch between the two components, and describes how to get help.

In This Chapter

This chapter contains the following sections:

- OpenVMS and OSF/1 Console Description
- Windows NT Firmware Description
- Switching from the OpenVMS and OSF/1 Console to the Windows NT Firmware
- Switching from the Windows NT Firmware to the OpenVMS and OSF/1 Console
- Getting Help on the OpenVMS and OSF/1 Console
- Getting Help on the Windows NT Firmware

OpenVMS and OSF/1 Console Description

Summary

This section describes the OpenVMS and OSF/1 console.

Environment Variables Affecting the Console

The following subsections refer to two of the system environment variables to describe particular system start-up conditions. Table 1–1 lists these environment variables and briefly describes them. See the following sections for more information on these environment variables.

Table 1–1 AUTO_ACTION and OS_TYPE Environment Variables

Environment Variable	Description
AUTO_ACTION	The AUTO_ACTION environment variable specifies the system default power-up action. It has three possible values: RESTART, HALT, and BOOT. The AUTO_ACTION environment variable applies only to the OpenVMS and OSF/1 operating systems. It does not affect the operation of the Windows NT operating system.
OS_TYPE	The OS_TYPE environment variable specifies the system default operating system setting. It has three possible values: VMS, OSF, and NT. Depending on the value, the system either boots or restarts the specified operating system, or halts in the specified firmware component. You can modify the value of this environment variable from both firmware components.

OpenVMS and OSF/1 Console Uses

The OpenVMS and OSF/1 Console is command-line based. You can use it to troubleshoot and perform tests on the system. You can also use this console to perform the following tasks:

- Boot the OpenVMS or OSF/1 operating systems
- Deposit and examine data in specified system memory or register locations
- Initialize the system unit
- Display the system configuration
- Display the system storage devices

- Set and display environment variables that are specific to OpenVMS and OSF/1
- Set and display environment variables that are common to OpenVMS, OSF/1, and Windows NT
- Test the system unit devices

Entering the OpenVMS and OSF/1 Console

The system enters and remains in the OpenVMS and OSF/1 console under the following conditions:

- When AUTO_ACTION is set to HALT and OS_TYPE is set either to VMS or to OSF.
- When power-up tests fail. The system ignores the OS_TYPE setting and enters the OpenVMS and OSF/1 console automatically. If the OS_TYPE setting is NT when the system fails, it returns to the Windows NT firmware when you correct the error.

Windows NT Firmware Description

Summary

This section describes the Windows NT firmware.

Environment Variables Affecting the Firmware

The following subsections refer to two of the system environment variables to describe particular system start-up conditions. Table 1–2 lists these environment variables and briefly describes them. See the following sections for more information on these environment variables.

Table 1–2 AUTOLOAD, COUNTDOWN, and OS_TYPE Environment Variables

Environment Variable	Description
AUTOLOAD	The AUTOLOAD environment variable specifies whether the Windows NT operating system should boot. It does not affect the OpenVMS or OSF/1 operating systems. It has two values: YES and NO. If the value is YES, the Windows NT firmware boots the system after the COUNTDOWN time-limit expires. If the value is NO, the system halts at the Windows NT firmware Boot menu.
COUNTDOWN	The COUNTDOWN environment variable specifies the time limit within which you can stop the Windows NT operating system from booting if AUTOLOAD is set to YES. The time limit is specified in seconds and the default value is 10. When you turn on the system or reinitialize the firmware, the system displays the seconds remaining before the operating system boots automatically. To stop the system from booting automatically, you must choose another menu item from the Boot menu.
OS_TYPE	The OS_TYPE environment variable specifies the system default operating system setting. It has three possible values: VMS, OSF, and NT. Depending on the value, the system either boots or restarts the specified operating system, or halts in the specified firmware component. You can modify the value of this environment variable from both firmware components.

Windows NT Firmware Uses

The Windows NT firmware is menu based. You can use it to boot Windows NT, install firmware updates, run the EISA Configuration Utility (ECU), and set environment variables that are specific only to Windows NT. You can use the firmware to perform the following tasks:

- Boot the Windows NT operating system
- Switch to the OpenVMS and OSF/1 console
- Run the ECU
- Run a program
- List Windows NT device names
- Change Windows NT boot configurations and environment variables

Entering the Windows NT Firmware

The system enters and remains in the Windows NT firmware under the following conditions:

- When OS_TYPE is set to NT and AUTOLOAD is set to NO
- When AUTOLOAD is set to YES and you choose another menu item on the Boot menu before the COUNTDOWN time limit expires

Switching from the OpenVMS and OSF/1 Console to the Windows NT Firmware

Summary

This section describes how to switch from the OpenVMS and OSF/1 console to the Windows NT firmware.

Switch Procedure

Table 1–3 lists the steps that you must follow to switch from the OpenVMS and OSF/1 console to the Windows NT firmware.

Table 1–3 Switching from the OpenVMS and OSF/1 Console

Step	Action	Result
1	If necessary, enter the OpenVMS and OSF/1 console by turning the system on or shutting down the operating system following the procedure described in the operating system documentation.	The system displays the console prompt (>>>).
2	Enter the command shown in Example 1–1 at the console prompt.	This command causes the system to enter the Windows NT firmware and to display the Boot menu.
3	Enter Ctrl/P or press the halt button on the front of the system unit, then wait approximately 10 seconds.	This sends a halt signal to the system. If the system did not fail any power-up or self tests, it initializes the firmware. After the system initializes the firmware, it enters the Windows NT firmware and displays the Windows NT firmware Boot menu.
4	If the system displays the AUTOLOAD countdown sequence (❶) and you do not want to boot the Windows NT operating system, press the up arrow key or down arrow key.	The system cancels the AUTOLOAD countdown and remains in the Windows NT firmware.

Switch Example

Example 1–1 shows the command that you must enter in the OpenVMS and OSF/1 console before you can switch to the Windows NT firmware.

Example 1–1 OpenVMS and OSF/1 Console Switch Command

```
>>> SET OS_TYPE NT

OS_TYPE = NT
>>>
```

Switch Result

Example 1–2 shows the Windows NT firmware Boot menu.

Example 1–2 Windows NT Firmware Boot Menu

```
ARC Multiboot DEC Version n.nn
Copyright (c) 1991, 1992 Microsoft Corporation
Copyright (c) 1993 Digital Equipment Corporation

Boot menu:

   Boot Windows NT
   Boot an alternate operating system
   Run a program
   Supplementary menu...

Use the arrow keys to select, then press Enter.
Seconds until auto-boot, select another option to override: 10 ❶
```

Switching from the Windows NT Firmware to the OpenVMS and OSF/1 Console

Summary

This section describes how to switch from the Windows NT firmware to the OpenVMS and OSF/1 console.

Switch Procedure

Table 1–4 lists the steps that you must follow to switch from the Windows NT firmware to the OpenVMS and OSF/1 console.

Table 1–4 Switching from the Windows NT Firmware

Step	Action	Result
1	If necessary, enter the Windows NT firmware by shutting down the operating system following the procedure described in the operating system documentation. Turn the system off and then on.	The system displays the Windows NT firmware Boot menu.
2	Choose the `Supplementary menu...` item on the Boot menu.	The system displays the Supplementary menu.
3	Choose the `Set up the system...` menu item on the Supplementary menu.	The system displays the Setup menu.
4	Choose the `Switch to OpenVMS or OSF console` menu item on the Setup menu and press Enter.	The system displays the reboot selection menu.
5	Choose either the `Switch to OpenVMS` or the `Switch to OSF` menu item on the reboot selection menu (see Example 1–3) and press Enter.	The system sets the OS_TYPE environment variable and displays the new current reboot selection.
6	Choose the `Setup menu...` menu item and press Enter.	The system displays an information message.
7	Follow the instructions in the message, then set the on/off switch on all peripherals and on the system unit to the off position.	

(continued on next page)

Table 1–4 (Cont.) Switching from the Windows NT Firmware

Step	Action	Result
8	Wait approximately 15 seconds.	Waiting allows electrostatic charges in the power supply and on the system module to dissipate.
9	Set the on/off switch on all peripherals and on the system unit to the on position.	When you turn the system on, it either halts or starts to boot. When the system halts, it displays the console prompt (>>>).
10	If the system starts to boot, press Ctrl/P or press the halt button on the front of the system unit.	The system displays the console prompt.

Reboot Selection Menu

Example 1–3 shows the Reboot selection menu.

Example 1–3 Selecting the Switch to OpenVMS Menu Item

```
Which operating system console should be launched at the next power-cycle?

Boot selection is currently NT.

    Switch to NT
    Switch to OpenVMS
    Switch to OSF
    Setup menu...

Use the arrow keys to select, then press Enter.
```

Getting Help on the OpenVMS and OSF/1 Console

Summary

This section describes how to get help on the OpenVMS and OSF/1 console.

OpenVMS and OSF/1 Console Help

The OpenVMS and OSF/1 console provides the following help commands:

- HELP
- HELP ADVANCED
- HELP SET
- HELP SHOW

HELP Command

Example 1–4 shows how to use the HELP command and the resulting display.

Example 1–4 HELP Command Display

```
>>> HELP

  BOOT
  HELP ADVANCED
  INIT
  SET <envar> <value>
  SHOW <envar>
  TEST
```

HELP ADVANCED Command

Example 1–5 shows how to use the HELP ADVANCED command and the resulting display.

Example 1–5 HELP ADVANCED Command Display

```
>>> HELP ADVANCED

  BOOT [-FL <bflg> ] [-FI <filnam>] <devlist>
  CONTINUE
  DEPOSIT [{ -B | -W | -L | -Q | -A }] [{ -PM | -VM }] [-U] [-N:<n>]
          [{ <addr> | <sym> | + | - | * | @ } [<datum>]]
  EXAMINE [{ -B | -W | -L | -Q | -A }] [{ -PM | -VM }] [-U] [-N:<n>]
          [{ <addr> | <sym> | + | - | * | @ }]
  HALT
  HELP [SET | SHOW]
  INIT
  REPEAT <cmd>
  SET <envar> <value>
  SHOW <envar>
  TEST <devnam> [<tstnam>]
```

HELP SET and HELP SHOW Commands

Example 1–6 shows how to use the HELP SET and HELP SHOW commands and the resulting displays.

Example 1–6 HELP SET and HELP SHOW Command Displays

```
>>> HELP SET

  SET AUTO_ACTION <{RESTART | 1} | {BOOT | 2 } | {HALT | 3}>
  SET BOOTDEF_DEV <ddau>
  SET BOOT_OSFLAGS <bflg>
  SET DIAGENV <1 | 2 | 3 >
  SET KEYBOARD < UK | US >
  SET SCSI_{A | B} <0 - 7>
  SET OS_TYPE <{NT | 1} | {VMS | 2} | {OSF | 3}>

>>>
>>> HELP SHOW

  SHOW { AUTO_ACTION   | BOOTDEF_DEV | BOOT_OSFLAGS  |
         CONFIG        | DEVICE      | DIAGENV       |
         ENVIRONMENT   | ERROR       | KEYBOARD      |
         MEMORY        | SCSI_{A | B}| OS_TYPE }

>>>
```

Getting Help on the Windows NT Firmware

Summary

This section describes how to get help on the Windows NT firmware.

Windows NT Firmware Help

The Windows NT firmware has a menu-based interface. It does not provide help on all the menu items contained in its menus. However, it does provide general help on using the Setup menu.

Displaying the Setup Menu Help Screen

Table 1–5 lists the steps that you must follow to display the Setup menu help screen.

Table 1–5 Displaying the Setup Menu Help Screen

Step	Action	Result
1	If necessary, enter the Windows NT firmware by shutting down the operating system following the procedure described in the operating system documentation. Turn the system off and then on.	The system displays the Windows NT firmware Boot menu.
2	Choose the `Supplementary menu...` item on the Boot menu.	The system displays the Supplementary menu.
3	Choose the `Set up the system...` menu item on the Supplementary menu.	The system displays the Setup menu.
4	Choose the `Help` menu item on the Setup menu and press Enter.	The system displays the Setup menu help screen.

Setup Menu Example

Example 1–7 shows the Setup menu.

Example 1–7 Selecting the Help Menu Item

```
ARC Multiboot DEC Version n.nn           Thursday, 6-10-1993   9:49:50 PM
Copyright (c) 1991, 1992  Microsoft Corporation
Copyright (c) 1993  Digital Equipment Corporation

Setup menu:

        .
        .
        .

     Reset system to factory defaults

     Help
     Switch to OpenVMS or OSF console
     Supplementary menu, and do not save changes...

Use the arrow keys to select, then press Enter.
```

Help Example

Example 1–8 shows the Setup menu help screen.

Example 1–8 Setup Menu Help Screen

```
Do the following steps, in this order, to set up the system:

1. Set system time.
2. Set default environment variables.
3. Set default configuration.
4. Create at least one boot selection.
5. Setup autoboot, if desired.
6. Run the EISA configuration utility.

-> An arrow next to a menu item means that something is wrong in this
area of the machine, and you should select this item to fix it.

"Reset system to factory defaults" does steps 2 -- 5 for a typical
system.

The ESCape key returns from a menu, and aborts a sequence.

The firmware automatically reboots if the configuration is changed.

 Press any key to continue...
```

2

Using the Windows NT Firmware

Introduction

This chapter describes how to use the Windows NT firmware.

In This Chapter

This chapter contains the following sections:

- Windows NT Firmware Introduction
- Accessing the Boot Menu
- Booting the Default Windows NT Boot Selection
- Booting an Alternative Windows NT Boot Selection
- Running a Program
- Accessing the Supplementary Menu
- Updating the Firmware
- Accessing the Setup Menu
- Listing Windows NT Firmware Device Names
- Setting the System Date and Time from the Windows NT Firmware
- Setting the Default System Partition
- Configuring the System Diskette Drives
- Setting the System to Boot Automatically
- Editing the System Environment Variables
- Default Windows NT Firmware Environment Variables
- Resetting the System to Factory Defaults
- Saving the System Set-Up or Quitting the Setup Menu
- Other Setup Menu Functions

Windows NT Firmware Introduction

Summary

The Windows NT firmware is menu based. It has three primary menus: the Boot menu, the Supplementary menu, and the Setup menu.

Boot Menu Functions

The Boot menu contains menu items that allow you to perform the following tasks:

- Boot the default boot selection
- Boot an alternative boot selection
- Run a program
- Access the Supplementary menu

Supplementary Menu Functions

The Supplementary menu contains menu items that allow you to perform the following tasks:

- Install new firmware
- Install Windows NT from a compact disc
- Access the Setup menu
- List the Windows NT firmware device names for the installed devices
- Execute the monitor program

Caution

The monitor program is intended for Digital service personnel only. Do not execute the monitor program unless you know how to use it.

- Return to the Boot menu

Setup Menu Functions

The Setup menu contains menu items that allow you to perform the following tasks:

- Set the system time
- Set the default system partition
- Configure the system diskette drives
- Manage the Windows NT boot selections
- Set the system to boot automatically
- Run the EISA configuration utility
- Edit the system environment variables
- Reset the system to factory defaults
- Set the default operating system and system firmware
- Return to the Supplementary menu, with or without saving Setup menu changes

Key Functions

Table 2–1 lists the functions of the keyboard (DECpc AXP 150 systems only) and equivalent terminal keys that you use with the Windows NT firmware.

Table 2–1 Windows NT Firmware Key Functions

Keyboard Key	Terminal Key	Function
Left arrow or right arrow	Left arrow or right arrow	Moves the cursor one space to the left or right
Up arrow or down arrow	Up arrow or down arrow	Chooses menu items or recalls values at prompts
Enter	Enter or Return	Selects a menu item or enters a value
Escape (Esc)	Ctrl/[	Cancels a screen or returns you to the previous menu
Backspace	Ctrl/H	Deletes the character to the left of the cursor
Delete		Deletes the character highlighted by the cursor and subsequent characters to the right
Home		Moves the cursor to the start of a line
End		Moves the cursor to the end of a line

Accessing the Boot Menu

Summary

This section describes how to access the Windows NT firmware Boot menu.

Access Procedure

Table 2–2 lists the steps that you must follow to access the Window NT firmware Boot menu from different system states.

Table 2–2 Accessing the Boot Menu

Step	Action	Result
1	If necessary, shut down the operating system following the instructions in the operating system documentation.	The system enters either the OpenVMS and OSF/1 console or the Windows NT firmware.
2	If the system was running OpenVMS or OSF/1, halt the reboot if necessary, and enter the SET OS_TYPE NT command to select the Windows NT firmware.	This command causes the system to enter the Windows NT firmware when you turn it off and then turn it on again.
3	Turn the system off, then turn it on again.	The system completes the power-up tests, checks the EISA configuration, then displays the Boot menu.

Boot Menu Example

Example 2–1 shows a sample Boot menu.

Example 2–1 Boot Menu Example

```
ARC Multiboot DEC Version n.nn
Copyright (c) 1991, 1992  Microsoft Corporation
Copyright (c) 1993  Digital Equipment Corporation

Boot menu:

   Boot Windows NT
   Boot an alternate operating system
   Run a program
   Supplementary menu...

Use the arrow keys to select, then press Enter.
```

Booting the Default Windows NT Boot Selection

Summary

This section describes how to boot the default boot selection on DECpc AXP 150 systems. When the system is shipped, the default boot selection is set to Windows NT.

Booting the Default Boot Selection

Table 2–3 lists the steps that you must follow to boot the default boot selection on DECpc AXP 150 systems.

Table 2–3 Booting the Default Boot Selection

Step	Action	Result
1	If necessary, access the Windows NT firmware Boot menu.	The system displays the Boot menu.
2	Choose the first menu item and press Enter. The first menu item takes the form `Boot <boot selection name>`. Usually, the boot selection name is Windows NT.	The system displays boot messages as it boots Windows NT or displays an error message if the boot selection is incorrectly defined.

If Errors Occur

See Chapter 3 if the system displays an error message when you attempt to boot the default boot selection.

Example

Example 2–2 shows the Windows NT firmware Boot menu.

Example 2–2 Choosing the Boot Windows NT Menu Item

```
ARC Multiboot DEC Version n.nn
Copyright (c) 1991, 1992  Microsoft Corporation
Copyright (c) 1993  Digital Equipment Corporation

Boot menu:
   Boot Windows NT
   Boot an alternate operating system
   Run a program
   Supplementary menu...

Use the arrow keys to select, then press Enter.
```

Booting an Alternative Windows NT Boot Selection

Summary

This section describes how to boot an alternative Windows NT boot selection on DECpc AXP 150 systems.

Booting an Alternative Boot Selection

Table 2–4 lists the steps that you must follow to boot an alternative boot selection on DECpc AXP 150 systems.

Table 2–4 Booting an Alternative Boot Selection

Step	Action	Result
1	If necessary, access the Windows NT firmware Boot menu.	The system displays the Boot menu.
2	Choose the `Boot an alternate operating system` menu item and press Enter.	The system displays a selection menu listing the system boot selections.
3	Choose the boot selection that you want to boot and press Enter.	The system displays boot messages as it boots the chosen boot selection or displays an error message if the boot selection is incorrectly defined.

If Errors Occur

See Chapter 3 if the system displays an error message when you attempt to boot the system using an alternative boot selection.

Example 1 Example 2–3 shows the Windows NT firmware Boot menu.

Example 2–3 Booting an Alternative Boot Selection

```
Boot menu:

   Boot the default operating system
   Boot an alternate operating system
   Run a program
   Supplementary menu...

Use the arrow keys to select, then press Enter.
```

Example 2 Example 2–4 shows the boot selection menu.

Example 2–4 Choosing the Alternative Boot Selection

```
Boot menu:

   Boot Windows NT  (Default)
   Boot Windows NT 2


Use the arrow keys to select, then press Enter.
```

Running a Program

Summary

This section describes how to run a program using the Run a program menu item.

Valid Programs

Digital supplies specially compiled and linked programs that you can run from the Windows NT firmware to perform various tasks. You can run these programs from any file allocation table (FAT) or NT file system (NTFS) formatted device. This facility allows you to install new firmware or configure your EISA and ISA options by running the firmware update utility or ECU from a disk drive partition rather than compact disc or diskette.

Running a Program

Table 2–5 lists the steps that you must follow to run a program from the Windows NT firmware Boot menu.

Table 2–5 Running a Program

Step	Action	Result
1	Access the Windows NT firmware Boot menu.	The system displays the Boot menu.
2	Choose the Run a program menu item and press Enter.	The system displays a prompt asking you to enter the name of the program.
3	Enter the name of the program, giving the complete device, path, and program name (see the subsection entitled Example).	The system searches the device and path that you specify for the program. If it finds the program, it executes it. When you exit the program, the system displays the Boot menu again.

Device Names

The Windows NT device names are listed in the Available hardware devices display. The following example shows the device name for a SCSI disk drive with SCSI ID 0:

```
scsi(0)disk(0)rdisk(0)
```

See the section entitled Listing Windows NT Firmware Device Names for information on Displaying the Available hardware devices display. To specify partition 1 on this device, you must specify the following device name:

```
scsi(0)disk(0)rdisk(0)partition(1)
```

Note

You can use an existing CD: environment variable to run programs from a CD-ROM drive, or the CD-ROM drive with the lowest SCSI ID if you have more than one installed.

Alternatively, you can define an environment variable to represent the device name, for example:

```
A:=eisa()disk()fdisk()
```

See the section entitled Editing the System Environment Variables for information on defining environment variables.

Path and Program Names

The path and program names use the full Windows NT file and directory names, for example:

```
\os\nt\osloader.exe
```

See the operating system documentation for information on file and directory names.

Example

The following example shows how to run a program called ECU.EXE from a directory called ECU on partition 1 of a disk with SCSI ID 0:

```
Program to run: scsi()disk()rdisk()partition(1)\ecu\ecu.exe
```

Alternatively, if you have an environment variable defining C: as the same partition on the disk drive, you can use the following program name:

```
Program to run: C:\ecu\ecu.exe
```

Accessing the Supplementary Menu

Summary

This section describes how to access the Supplementary menu in the Windows NT firmware.

Accessing the Supplementary Menu

Table 2–6 lists the steps that you must follow to access the Supplementary menu.

Table 2–6 Accessing the Supplementary Menu

Step	Action	Result
1	If necessary, access the Windows NT firmware Boot menu.	The system displays the Boot menu.
2	Choose the Supplementary menu... menu item and press Enter	The system displays the Supplementary menu.

Supplementary Menu Example

Example 2–5 shows the Supplementary menu.

Example 2–5 Accessing the Supplementary Menu

```
ARC Multiboot DEC Version n.nn
Copyright (c) 1991, 1992  Microsoft Corporation
Copyright (c) 1993  Digital Equipment Corporation

Supplementary menu:

   Install new firmware
   Install Windows NT from CD-ROM
   Set up the system...
   List available devices
   Execute monitor
   Boot menu...

Use the arrow keys to select, then press Enter.
```

Updating the Firmware

Summary

This section describes how to update the system firmware from diskette, compact disc, or another location.

Important Safety Rules

Follow these rules when you are upgrading the firmware:

- If the new firmware is on compact disc, copy the JNUPDATE.EXE file from the compact disc to a diskette.
- Make sure that you do not switch the system off once the firmware update procedure begins. If you accidentally switch off the system, if the power fails during the update procedure, or if the update fails, see Appendix C for information on using the fail-safe booter to recover the system firmware.

Updating the Firmware

Table 2–7 lists the steps that you must follow to update the system firmware.

Table 2–7 Updating the Firmware

Step	Action	Result
1	If necessary, access the Supplementary menu.	The system displays the Supplementary menu.
2	Insert the diskette or compact disc containing the firmware update.	
3	Choose the `Install new firmware` menu item and press Enter.	The system searches the diskette drive and CD-ROM drive for the firmware update utility (JNUPDATE.EXE). When it finds the firmware update utility, it asks you to confirm your intention to continue.

(continued on next page)

Table 2–7 (Cont.) Updating the Firmware

Step	Action	Result
4	Press Y on the keyboard to continue, or any other key to abort the update.	If you press Y, the system displays the update file location menu. If you press any other key, the system returns to the Supplementary menu.
5	Choose the location of the update file (JENSFW.BIN) and press Enter.	If you choose the Floppy or CD-ROM menu items, the system locates, reads, and verifies the update file. If the system fails to locate, read, or verify the update file, the system aborts the update. If the system does not fail to complete these actions, it asks you to confirm your intention twice. Go to step 6 for information on completing the update if the update file passes the verification test.
6	If you chose the `Other location` menu item, enter the update file device and path name, then press Enter.	The system locates, reads and verifies the update file. If the system fails to locate, read, or verify the update file, the system aborts the update. If the system does not fail to complete these actions, it asks you to confirm your intention twice.
7	Press Y both times to continue, or press any other key at either prompt to abort the update.	If you press Y both times, the system begins updating the firmware.

Alternative Method

You can run the firmware update utility (JNUPDATE.EXE) from a device other than the diskette drive or the CD-ROM drive using the `Run a program` menu item on the Boot menu. Follow the instructions listed in the section entitled Running a Program , then complete the steps listed in Table 2–7 starting at step 3.

Firmware Update Utility Example

Example 2–6 shows a partial display of a successful firmware update.

Example 2–6 Firmware Update Example

```
 Select location of update file.

 Use the arrow keys to select.
 Press Enter to choose.
 Hit Escape to abort.

    Floppy (eisa()disk()fdisk()jensfw.bin)
    CD-ROM (scsi()cdrom(4)fdisk()jensfw.bin)
    Other location
    Exit

 Location of update file: a:jensfw.bin

 Locating the update file...
 Reading the update file...
 Verifying the update file...

 The update file is good!
 The name of this firmware update is...:

DECpc AXP 150 firmware update, complete 1Meg FLASH update.

 Press the "Y" key to continue with the update.
 Hit any other key to abort.

 Are you *really* sure?
 Press the "Y" key to continue with the update.
 Hit any other key to abort.


Clearing the low PROM block...
Clearing and writing the higher PROM blocks..............
Writing the low PROM block..

The update has succeeded.  Power-cycle the machine to see the changes.

 Press any key to continue...
```

Accessing the Setup Menu

Summary

This section describes how to access the Setup menu.

Accessing the Setup Menu

Table 2–8 lists the steps that you must follow to access the Setup menu.

Table 2–8 Accessing the Setup Menu

Step	Action	Result
1	If necessary, access the Supplementary menu.	The system displays the Supplementary menu.
2	Choose the `Set up the system...` menu item and press Enter.	The system displays the Setup Menu.

Identifying and Correcting Setup Errors

The system can detect setup errors that may prevent the system from booting. When you access the setup menu, it indicates the menu item that you must choose to correct the error with an arrow symbol (->). There are two methods that you can use to correct these errors, as follows:

- Choose each menu item that indicates an error, starting from the top of the menu, and correct the errors.
- Choose the `Reset system to factory defaults` menu item.

  See the section entitled Resetting the System to Factory Defaults for more information on this menu item.

Setup Menu Example

Example 2–7 shows the Setup menu.

Example 2–7 Setup Menu

```
Setup menu:

     Set system time
     Set default environment variables
   ->Set default configuration
     Manage boot selections...
     Setup autoboot

     Run EISA configuration utility from floppy
     Edit environment variables
     Reset system to factory defaults

     Help
     Switch to OpenVMS or OSF console
     Supplementary menu, and do not save changes...
     Supplementary menu, and save changes...

Use the arrow keys to select, then press Enter.
```

Listing Windows NT Firmware Device Names

Summary

This section describes how to display the Available hardware devices display. The Available hardware devices display lists the Windows NT firmware device names of the hardware devices installed in the system.

Listing the Device Names

Table 2–9 lists the steps that you must follow to display the Available hardware devices display.

Table 2–9 Listing the Windows NT Firmware Device Names

Step	Action	Result
1	If necessary, access the Setup menu.	The system displays the Setup menu.
2	Choose the `Set up the system...` menu item and press Enter.	The system displays the Available hardware devices display.

Windows NT Firmware Device Names

Table 2–10 describes the meaning of these device names.

Note

The Available hardware devices display does not list tape drive or network devices.

Table 2–10 Windows NT Firmware Device Names

Name	Description
multi(0)key(0)keyboard(0) multi(0)serial(0) multi(0)serial(1)	The multi( ) devices are located on the system module. These devices include the keyboard port and the serial line ports.

(continued on next page)

Table 2–10 (Cont.) Windows NT Firmware Device Names

Name	Description
eisa(0)video(0)monitor(0) eisa(0)disk(0)fdisk(0)	The eisa( ) devices are provided by devices on the EISA bus. These devices include the monitor and the diskette drive.
scsi(0)disk(0)rdisk(0) scsi(0)cdrom(4)fdisk(0)	The scsi( ) devices are SCSI disk or CD-ROM devices. These examples represent SCSI devices on SCSI bus A. The disk drive is set to SCSI ID 0 and the CD-ROM drive is set to SCSI ID 4. Both devices have logical unit numbers of 0.

Available Hardware Devices Display

Example 2–8 shows a sample Available hardware devices display.

Example 2–8 Available Hardware Devices Display

```
Available hardware devices:

eisa(0)video(0)monitor(0)
multi(0)key(0)keyboard(0)
eisa(0)disk(0)fdisk(0)
scsi(0)disk(0)rdisk(0)
scsi(0)cdrom(4)fdisk(0)
multi(0)serial(0)
multi(0)serial(1)

Press any key to continue...
```

Setting the System Date and Time from the Windows NT Firmware

Summary

This section describes how to set the system date and time from the Windows NT firmware.

Setting the Date and Time

Table 2–11 lists the steps that you must follow to set the system date and time.

Table 2–11 Setting the System Date and Time

Step	Action	Result
1	If necessary, access the Setup menu.	The system displays the Setup menu.
2	Choose the `Set system time menu` item and press Enter.	The system displays a prompt that asks you to enter the date and indicates the date format that it expects (month, day, year).
3	Enter the date in the required format and press Enter.	The system saves the date that you set in the nonvolatile random-access memory (NVRAM). It then displays a prompt that asks you to enter the time and indicates the time format that it expects (hours, minutes, seconds).
4	Enter the time in the required format and press Enter.	The system saves the date that you set in the NVRAM, returns to the Setup menu, and displays the new day, date, and time at the top of the screen.

Set System Time Example

Example 2–9 shows an example of setting the system time to 11:59 PM, December 31, 1999.

Example 2–9 Set System Time Example

```
                                        Sunday, 3-15-1998   12:13:33 AM

   Enter the new date (mm-dd-yy) :  12-31-99
   Enter time (hh:mm:ss) :  11:59:00
```

Setting the Default System Partition

Summary This section describes how to set the default system partition.

System Partition Definition The system partition is the partition that contains the operating system loader (OSLOADER.EXE for Windows NT).

Setting the System Partition Table 2–12 lists the steps that you must follow to set the default system partition.

Table 2–12 Setting the Default System Partition

Step	Action	Result
1	If necessary access the Setup menu.	The system displays the Setup menu.
2	Choose the `Set default environment variables` menu item and press Enter.	The system displays a list of three device types: SCSI Hard Disk, Floppy Disk, and CD-ROM.
3	Select one of the device types and press Enter.	The system displays different prompts depending on the device that you selected.
4	If you chose the `SCSI Hard Disk` menu item, specify the SCSI ID and the partition number and press Enter.	The firmware holds the values you specify in memory. See step 7 for information on saving these values.
5	If you chose the `Floppy Drive` menu item, specify the diskette drive number and press Enter.	The firmware holds the values you specify in memory. See step 7 for information on saving these values.
6	If you chose the `CD-ROM` menu item, specify the SCSI ID and press Enter.	The firmware holds the values you specify in memory. See step 7 for information on saving these values.
7	If you have finished making changes in the Setup menu, see the section entitled Saving the System Set-Up or Quitting the Setup Menu .	The system saves the changes only when you exit from the Setup menu.

Default System Partition Example

Example 2–10 shows an example of setting up the default system partition as partition 1 on a SCSI disk drive with SCSI ID 1.

Example 2–10 Setting the Default System Partition

```
Enter location of default system partition:
     Select media:
   Scsi Hard Disk
   Floppy Disk
   CD-ROM

     Enter SCSI ID: 1
     Enter partition (must be FAT or NTFS) : 1
```

Effects of This Procedure

Table 2–13 describes how this procedure affects other system settings and the actions that you must take as a result of using the procedure.

Table 2–13 Effects of Setting the Default System Partition

Effect	Suggested Action
Sets the SYSTEMPARTITION environment variable value	None.
Sets the FWSEARCHPATH environment variable to the same value as the SYSTEMPARTITION environment variable	None.
Clears the diskette drive information in the default system configuration	See the section entitled Configuring the System Diskette Drives for information on setting the diskette drive information in the system configuration.
Clears all boot selection environment variables except SYSTEMPARTITION	See Chapter 3 for information on adding a boot selection before you try to boot Windows NT.
Clears the AUTOLOAD and COUNTDOWN environment variables	See the section entitled Setting the System to Boot Automatically for information on setting the AUTOLOAD and COUNTDOWN environment variables.

Configuring the System Diskette Drives

Summary

This section describes how to configure the system diskette drives.

Configuring the System Diskette Drives

Table 2–14 lists the steps that you must follow to configure the system diskette drives.

Table 2–14 Configuring the System Diskette Drives

Step	Action	Result
1	If necessary access the Setup menu.	The system displays the Setup menu.
2	Choose the `Set default configuration` menu item and press Enter.	The system displays a prompt asking you to choose the diskette drive capacity.
3	Choose the diskette drive capacity and press Enter.	The firmware holds a value indicating the diskette drive capacity in memory. It then displays a prompt asking you to specify whether there is a second diskette drive.
4	If the system does not contain a second diskette drive, choose no and press Enter.	The firmware holds the value *N* in memory, then displays the Setup menu.
5	If the system contains a second diskette drive, choose yes and press Enter.	The system displays a prompt asking you to choose the diskette drive capacity.
6	Choose the diskette drive capacity and press Enter.	The system holds a value indicating the diskette drive capacity in memory, then displays the Setup menu.
7	If you have finished making changes in the Setup menu, see the section entitled Saving the System Set-Up or Quitting the Setup Menu .	The system saves the changes only when you exit from the Setup menu.

Diskette Drive Configuration Example

Example 2–11 shows an example of configuring a system with two diskette drives.

Example 2–11 Configuring the System Diskette Drives

```
Select floppy drive capacity:
   5.25" 1.2MB
   3.5"  1.44MB
   3.5"  2.88MB

Is there a second floppy:
   Yes
   No

Select floppy drive capacity:
   5.25" 1.2MB
   3.5"  1.44MB
   3.5"  2.88MB
```

Effects of This Procedure

Table 2–15 describes how this procedure affects other system settings and the actions that you must take as a result of using the procedure.

Table 2–15 Effects of Configuring the System Diskette Drives

Effect	Suggested Action
Sets the FLOPPY environment variable to 0, 1, or 2.	None.
Sets the FLOPPY2 environment variable to N, 0, 1, or 2.	None.
Affects the EISA configuration.	Run the EISA configuration utility following the instructions listed in Chapter 4.

Setting the System to Boot Automatically

Summary

This section describes how to set the system to boot automatically, when you turn it on, or when you switch from the OpenVMS and OSF console to the Windows NT firmware.

Setting the System to Boot Automatically

Table 2–16 lists the steps that you must follow to set the system to boot automatically.

Table 2–16 Setting the System to Boot Automatically

Step	Action	Result
1	If necessary access the Setup menu.	The system displays the Setup menu.
2	Choose the `Setup autoboot` menu item and press Enter.	The system displays a prompt asking you whether you want the system to boot automatically.
3	If you do not want the system to boot automatically, choose No and press Enter.	The system displays the Setup menu.
4	If you want the system to boot automatically, choose Yes and press Enter.	The system prompts you to enter the countdown value. You specify the countdown value in seconds. The countdown value gives you that number of seconds to stop the system from booting.
5	Enter a value for the countdown and press Enter.	The system displays the Setup menu.
6	If you have finished making changes in the Setup menu, see the section entitled Saving the System Set-Up or Quitting the Setup Menu .	The system saves the changes only when you exit from the Setup menu.

Setup Autoboot Example

Example 2–12 shows an example of setting the system to autoboot and setting the countdown value to 10 (default).

Example 2–12 Setting the System to Boot Automatically

```
Should the system autoboot:
   Yes
   No

Enter Countdown value (in seconds): 10
```

Effects of This Procedure

Table 2–17 describes how this procedure affects other system settings and the actions that you must take as a result of using the procedure.

Table 2–17 Effects of Setting the System to Boot Automatically

Effect	Suggested Action
Sets the AUTOLOAD environment variable to YES or NO.	None.
Sets the COUNTDOWN environment variable to a value in seconds.	None.
Causes the system to begin a boot countdown sequence when you access the Boot menu in certain ways.	Use the up arrow or down arrow keys to choose another menu item to cancel the boot countdown and remain in the Windows NT firmware.

Editing the System Environment Variables

Summary

This section describes how to edit the system environment variables.

Important Information

Caution

Editing the values of the default Windows NT firmware environment variables can cause serious damage to the system. You must use this procedure only to edit or create your own environment variables. If you accidentally delete or modify one of the default Windows NT firmware environment variables, immediately follow the procedure described in the section entitled Resetting the System to Factory Defaults to reset the value.

Editing Environment Variables

Table 2–18 lists the steps that you must follow to edit the environment variables.

Table 2–18 Editing the System Environment Variables

Step	Action	Result
1	If necessary access the Setup menu.	The system displays the Setup menu.
2	Choose the `Edit environment variables` menu item and press Enter.	The system displays the environment variable edit screen.
3	Use the up arrow key or down arrow key to select the name of an existing environment variable or enter a new environment variable name.	Pressing the up arrow key or down arrow key displays the environment variables names in the list.
4	If necessary, edit the environment variable name. Press Enter when the environment name is correct.	The system displays the current value of the environment variable, if it already exists.

(continued on next page)

Table 2–18 (Cont.) Editing the System Environment Variables

Step	Action	Result
5	If you want to update the environment variable value, edit or enter the environment variable value and press Enter.	The system includes the modified or new environment variable at the bottom of the list.
6	If you want to delete the environment variable, leave the value field blank and press Enter.	The system deletes the environment variable from the list.
7	Press the escape (ESC) key to return to the Setup menu.	The system displays the Setup menu.
8	If you have finished making changes in the Setup menu, see the section entitled Saving the System Set-Up or Quitting the Setup Menu .	The system saves the changes only when you exit from the Setup menu.

Edit Environment Variables Example

Example 2–13 shows an example of adding a user-defined environment variable.

Example 2–13 Editing Environment Variables

```
Use Arrow keys to select a variable, ESC to exit:

   Name:  C:
   Value:  scsi()disk(0)rdisk()partition(1)

Environment variables:
    CONSOLEIN=multi()key()keyboard()console()
    CONSOLEOUT=eisa()video()monitor()console()
    FWSEARCHPATH=scsi()disk(0)rdisk()partition(1)
    TIMEZONE=PST8PDT
    A:=eisa()disk()fdisk()
    FLOPPY2=N
    FLOPPY=1
    AUTOLOAD=YES
    COUNTDOWN=10
```

Effects of This Procedure

This procedure creates an environment variable that you create in other parts of the Windows NT firmware.

Default Windows NT Firmware Environment Variables

Summary

This section describes the default Windows NT firmware environment variables.

Important Information

Caution

Do not edit or delete the default firmware Windows NT environment variables. This can cause serious damage to the system.

Default Environment Variables

Table 2–19 lists and explains the default Windows NT firmware environment variables.

Table 2–19 Windows NT Firmware Environment Variables

Variable	Description
CONSOLEIN	The console input device. The default value is multi( )key( )keyboard( )console( ).
CONSOLEOUT	The console output device. The default value is eisa( )video( )monitor( )console( ).
FWSEARCHPATH	The search path used by the Windows NT firmware and other programs to locate particular files. The default value is the same as the SYSTEMPARTITION environment variable value.
TIMEZONE	The time zone in which the system is located. This variable accepts ISO/IEC9945-1 (POSIX) standard values.
A:	The default diskette drive. The default value is eisa( )disk( )fdisk( ).
FLOPPY	The capacity of the default diskette drive, either 1 (1.2M bytes), 2 (1.44M bytes), or 3 (2.88M bytes).

(continued on next page)

Table 2–19 (Cont.) Windows NT Firmware Environment Variables

Variable	Description
FLOPPY2	The capacity of an optional second diskette drive, either N (not installed), 1, 2, or 3.
AUTOLOAD	The default startup action, either YES (boot) or NO or undefined (remain in Windows NT firmware).
COUNTDOWN	The default time-limit in seconds before the system boots automatically when AUTOLOAD is set to yes. The default value is 10.

Other Environment Variables

The operating system or other programs, for example, the ECU, may create either temporary or permanent environment variables for their own use. Do not edit or delete these environment variables.

Resetting the System to Factory Defaults

Summary

This section describes how to reset the system to the factory default settings.

Resetting to Factory Defaults

Table 2–20 lists the steps that you must follow to reset the system to the factory default settings.

Table 2–20 Resetting the System to Factory Defaults

Step	Action	Result
1	If necessary access the Setup menu.	The system displays the Setup menu.
2	Choose the `Reset system to factory defaults` menu item and press Enter.	The system displays a selection menu asking you to confirm your choice.
3	Choose NO and press Enter if you do not want to continue.	The system displays the Setup menu.
4	Choose YES and press Enter if you want to continue.	The system sets the default environment variables, sets the default configuration, creates at least one boot selection, and sets the AUTOLOAD environment variable to YES. It then displays the Setup menu.
5	If you have finished making changes in the Setup menu, see the section entitled Saving the System Set-Up or Quitting the Setup Menu .	The system saves the changes only when you exit from the Setup menu.

Effects of This Procedure

Resetting the system to factory defaults clears the EISA configuration information. You must run the EISA configuration utility (ECU) on the system before you try to boot the operating system. See Chapter 4 for information on using the ECU.

Saving the System Set-Up or Quitting the Setup Menu

Summary

This section describes how to exit from the Setup menu with or without saving the changes you make to the system set-up.

Saving the System Set-Up

Table 2–21 lists the steps that you must follow to save the system set-up after you make changes to it.

Table 2–21 Saving the System Set-Up

Step	Action	Result
1	Choose the Supplementary menu, and save changes... menu item and press Enter.	The system saves the changes that you have made in the NVRAM and then displays the Supplementary menu.

Quitting the Setup Menu

Table 2–22 lists the steps that you must follow to quit from the Setup menu without saving the changes that you made to the system set-up.

Table 2–22 Quitting the Setup Menu

Step	Action	Result
1	Choose the Supplementary menu, and do not save changes... menu item and press Enter.	The system discards the changes that you have made and then displays the Supplementary menu.

Other Setup Menu Functions

Summary

This section describes where to get information on the following Setup menu functions:

- Managing boot selections
- Running the EISA configuration utility (ECU)

Managing Boot Selections

See Chapter 3 for information on managing the Windows NT boot selections.

Running the ECU

See Chapter 4 for information on running the EISA configuration utility.

3

Managing Windows NT Boot Selections

Introduction

This chapter describes how to manage the boot selections that the Windows NT operating system uses when booting.

In This Chapter

This chapter contains the following sections:

- Accessing the Boot Selections Menu
- Information on Boot Selection Variables
- Adding a Boot Selection
- Checking the Boot Selections for Errors
- Changing a Boot Selection
- Displaying the System Boot Selections
- Changing the Default Boot Selection
- Deleting a Boot Selection

Accessing the Boot Selections Menu

Summary

This section describes how to access the Boot selections menu.

Accessing the Boot Selections Menu

Table 3–1 lists the steps that you must follow to access the Boot selections menu.

Table 3–1 Accessing the Boot Selections Menu

Step	Action	Result
1	If necessary, access the Setup menu.	The system displays the Setup menu.
2	Choose the `Manage boot selections` menu item and press Enter.	The system displays the Boot selections menu.

Boot Selections Menu Example

Example 3–1 shows the Boot selections menu.

Example 3–1 Boot Selections Menu

```
Boot selections menu:

   Add a boot selection
   Change a boot selection
   Check boot selections
   Delete a boot selection
   Dump boot selections
   Rearrange boot selections
   Setup menu...

Use the arrow keys to select, then press Enter.
```

Information on Boot Selection Variables

Summary

This section describes the Windows NT Boot selection variables that the system uses when booting.

Boot Selection Variables

Table 3–2 lists and explains the boot selection variables.

Table 3–2 Windows NT Boot Selection Variables

Variable	Description
LOADIDENTIFIER	The name of the boot selection, for example, Windows NT. You can specify any string value. The firmware does not check the value of this string.
SYSTEMPARTITION	The ARC-defined device name for the partition containing the operating system loader (OSLOADER.EXE for Windows NT).
OSLOADER	The full file name of the operating system loader, including partition device name, directories, and file name.
OSLOADPARTITION	The ARC-defined device name for the partition containing the operating system kernel.
OSLOADFILENAME	The directory name of the root directory for the operating system directory tree, including partition device name (\WINNT.EXE for Windows NT).
OSLOADOPTIONS	A string that is passed to the operating system. The firmware does not check the value of this string.

Adding a Boot Selection

Summary This section describes how to add a boot selection.

Adding a Boot Selection Table 3–3 lists the steps that you must follow to add a boot selection.

Table 3–3 Adding a Boot Selection

Step	Action	Result
1	If necessary, access the Boot selections menu.	The system displays the Boot selections menu.
2	Choose the `Add a boot selection` menu item and press Enter.	The system displays a series of selection menus and prompts relating to the Windows NT operating system.
3	If you have not changed the location of the operating system files, you can use the default answers and choices provided by the procedure.	The system includes the boot selection in the list of boot selections and then displays the Boot selections menu.
4	If you have changed the location of the operating system files, you must edit the default answers or choose selections other than those provided by the procedure. See your operating system documentation for more information.	The system includes the boot selection in the list of boot selections and then displays the Boot selections menu.
5	If you have finished modifying the boot selections, choose the `Setup menu...` menu item and press Enter.	The system displays the Setup menu.

Example

Example 3–2 shows an example of adding a boot selection.

Example 3–2 Adding a Boot Selection

```
Select a system partition for this boot selection:
   Scsi Hard Disk 0 Partition 1
   New system partition

Enter location of system partition for this boot selection:
     Select media:
   Scsi Hard Disk
   Floppy Disk
   CD-ROM

     Enter SCSI ID: 4

Enter the osloader directory and name: \os\nt\osloader.exe

Is the operating system in the same partition as the osloader:
   Yes
   No

Enter location of os partition:
     Select media:
   Scsi Hard Disk
   Floppy Disk
   CD-ROM

     Enter SCSI ID: 0
     Enter partition : 1

Enter the operating system root directory: \winnt

Enter a name for this boot selection: Windows NT
Do you want to initialize the debugger at boot time:
   Yes
   No
```

Checking the Boot Selections for Errors

Summary

This section describes how to check the system boot selections for errors.

Errors in Boot Selections

There are two main causes of errors in boot selections:

- The boot selection is defined incorrectly

  This causes the system to search in the wrong locations for the operating system files.

- The operating system is installed incorrectly

  This causes the system to fail when it tries to locate the operating system files.

You must consider both possibilities when trying to correct any errors detected in the boot selection.

Checking the Boot Selections

Table 3–4 lists the steps that you must follow to check the boot selections for errors.

Table 3–4 Checking the Boot Selections for Errors

Step	Action	Result
1	If necessary, access the Boot selections menu.	The system displays the Boot selections menu.
2	Choose the `Check boot selections` menu item and press Enter.	The system checks the boot selections for errors. If it does not detect any errors, it remains in the Boot selections menu. If it does detect errors, it displays the name of the boot selection in which it detected the error, a selection menu, and a message indicating the cause of the error.

(continued on next page)

Table 3–4 (Cont.) Checking the Boot Selections for Errors

Step	Action	Result
3	If you want to change the boot selection variables causing the error, choose the Change this boot selection menu item and press Enter. Follow the steps listed in Table 3–5 starting at step 4 for information on changing the variable values.	The system displays the Boot selection edit display, listing the boot selection variables and their values.
4	If you want to delete the boot selection, choose the Delete this boot selection menu item and press Enter.	The system deletes the boot selection. If the system detects further boot selections with errors, it repeats the display for that boot selection. Otherwise, it displays the Boot selections menu.
5	If you want to ignore errors in the boot selection, choose the Ignore problems with this boot selection menu item and press Enter.	If the system detects further boot selections with errors, it repeats the display for that boot selection. Otherwise, it displays the Boot selections menu. When you return to the Setup menu, the Manage boot selections menu item error indicator (->) remains.
6	If you have finished modifying the boot selections, choose the Setup menu... menu item and press Enter.	The system displays the Setup menu.

Example

Example 3–3 shows an example of the display that results when the system detects an error in a boot selection.

Example 3–3 Checking the Boot Selections for Errors

```
Problems were found with Windows NT .  Choose an action:

   Ignore problems with this boot selection
   Delete this boot selection
   Change this boot selection

OSLOADPARTITION cannot be found, value is:
    scsi()disk(0)rdisk()partition(2)
```

Changing a Boot Selection

Summary

This section describes how to change a boot selection by modifying the values of the boot selection variables.

Changing a Boot Selection

Table 3–5 lists the steps that you must follow to change the value of a boot selection variable.

Table 3–5 Changing a Boot Selection

Step	Action	Result
1	If necessary, access the Boot selections menu.	The system displays the Boot selections menu.
2	Choose the `Change a boot selection` menu item and press Enter.	The system displays a selection menu listing the names of the system boot selections.
3	Choose the name of the boot selection that you want to change and press Enter.	The system displays the Boot selection edit display, listing the boot selection variables and their values.
4	Press the up arrow key or down arrow key to select the name of a variable.	Pressing the up arrow key or down arrow key displays the boot selection variable names in the list.
5	Press Enter when the system displays the name of the variable whose value you want to change.	The system displays the current value of the variable.
6	To update the boot selection variable value, edit the existing value and press Enter.	The system includes the modified or new boot selection variable in the boot selection display.
7	Press the escape (Esc) key to return to the Boot selections menu.	The system displays the Boot selections menu.

(continued on next page)

Table 3–5 (Cont.) Changing a Boot Selection

Step	Action	Result
8	If you have finished modifying the boot selections, choose the Setup menu... menu item and press Enter.	The system displays the Setup menu.

Example

Example 3–4 shows an example of changing a boot selection.

Example 3–4 Changing a Boot Selection

```
 Use Arrow keys to select a variable, ESC to exit:

    Name:  OSLOADFILENAME
    Value:  \winnt

Environment variables for boot selection 1:
     LOADIDENTIFIER=Windows NT
     SYSTEMPARTITION=scsi()disk(0)rdisk()partition(1)
     OSLOADER=scsi()disk(0)rdisk()partition(1)\osloader.exe
     OSLOADPARTITION=scsi()disk(0)rdisk()partition(2)
     OSLOADFILENAME=\winnt
     OSLOADOPTIONS=nodebug
```

Displaying the System Boot Selections

Summary

This section describes how to fully display the system boot selections.

Displaying the System Boot Selections

Table 3–6 lists the steps that you must follow to fully display the system boot selections.

Table 3–6 Displaying the System Boot Selections

Step	Action	Result
1	If necessary, access the Boot selections menu.	The system displays the Boot selections menu.
2	Choose the `Dump boot selections` menu item and press Enter.	The system displays the system boot selections. The boot selection variable values for each boot selection are separated by semicolons (;). When possible, the values share the same line to save space on the screen.
3	When you have finished examining the boot selections, press Enter, or any other key.	The system displays the Boot selections menu.

Example

Example 3–5 shows an example of a boot selections display.

Example 3–5 System Boot Selections Display

```
LOADIDENTIFIER=Windows NT 2;Windows NT ;Windows NT 3
SYSTEMPARTITION=scsi()disk(0)rdisk()partition(1);
                scsi()disk(0)rdisk()partition(1);
                scsi()disk(0)rdisk()partition(1)
OSLOADER=scsi()disk(0)rdisk()partition(1)\os\nt\osloader.exe;
         scsi()disk(0)rdisk()partition(1)\os\nt\osloader.exe;
         scsi()disk(0)rdisk()partition(1)\osloader.exe
OSLOADPARTITION=scsi()disk(0)rdisk()partition(1);
                scsi()disk(0)rdisk()partition(1);
                scsi()disk(0)rdisk()partition(2)
OSLOADFILENAME=\winnt;\winnt;\winnt
OSLOADOPTIONS=nodebug;nodebug;nodebug

 Press any key to continue...
```

Changing the Default Boot Selection

Summary

This section describes how to change the default boot selection.

Default Boot Selection Definition

The default boot selection is the first boot selection on the system boot selections list. It is the boot selection that the system attempts to boot automatically if the AUTOLOAD environment variable is set to YES.

Changing the Default Boot Selection

Table 3–7 lists the steps that you must follow to change the default boot selection.

Table 3–7 Changing the Default Boot Selection

Step	Action	Result
1	If necessary, access the Boot selections menu.	The system displays the Boot selections menu.
2	Choose the `Rearrange boot selections` menu item and press Enter.	The system displays a selection menu listing the names of the system boot selections.
3	If you do not want to change the default boot selection, press the escape (Esc) key.	The system displays the Boot selections menu without changing the default boot selection.
4	If you want to change the default boot selection, choose the name of the boot selection that you want to become the default boot selection and press Enter.	The system places that boot selection at the top of the system boot selection list where it becomes the default boot selection.
5	Press the escape (Esc) key when you have finished rearranging the order of the boot selections.	The system displays the Boot selections menu.
6	If you have finished modifying the boot selections, choose the `Setup menu...` menu item and press Enter.	The system displays the Setup menu.

Example

Example 3–6 shows an example of changing the default boot selection.

Example 3–6 Changing the Default Boot Selection

```
Pick selection to move to the top, ESC to exit:
   Windows NT
   Windows NT 2
   Windows NT 3
```

Deleting a Boot Selection

Summary This section describes how to delete a boot selection.

Deleting a Boot Selection Table 3–8 lists the steps that you must follow to delete a boot selection.

Table 3–8 Deleting a Boot Selection

Step	Action	Result
1	If necessary, access the Boot selections menu.	The system displays the Boot selections menu.
2	Choose the `Delete a boot selection` menu item and press Enter.	The system displays a selection menu listing the names of the system boot selections.
3	If you do not want to delete a boot selection, press the escape (Esc) key.	The system then displays the Boot selections menu without deleting a boot selection.
4	If you want to delete a boot selection, choose the name of that boot selection and press Enter.	The system deletes the boot selection and displays the Boot selections menu.
5	If you have finished modifying the boot selections, choose the `Setup menu...` menu item and press Enter.	The system displays the Setup menu.

Example Example 3–7 shows an example of deleting a boot selection.

Example 3–7 Deleting a Boot Selection

```
Selection to delete:
   Windows NT
   Windows NT 2
   Windows NT 3
```

4

Using the EISA Configuration Utility

Introduction

This chapter describes how to use the EISA Configuration Utility (ECU) to configure EISA or ISA option boards within the system.

In This Chapter

This chapter contains the following sections:

- EISA Configuration Utility Overview
- Running the ECU
- Quick Configuration
- Configuring an EISA Option
- Configuring an ISA Option
- Using the Generic ISA Configuration File
- Moving an EISA Option Board to Another Slot
- Moving an ISA Option Board to Another Slot
- Removing an Option Board
- Changing Board Function and Resource Settings
- Advanced ECU Features
- Resolving a Conflict in the Configuration

EISA Configuration Utility Overview

Summary

This section provides a brief overview of the functions of the ECU and provides information that you must read before using it.

Function of the ECU

The system uses the ECU to assign system resources to each option board installed in the system. These resources include interrupt requests, direct memory access, input/output ports, and memory buffers. The ECU also identifies configuration conflicts and identifies the settings causing these conflicts.

You can use the ECU to customize the functions of the options boards installed in the system. For example, you can use the ECU to enable or disable network booting on a network option board.

Configuration Files

Note

The standard configuration (.CFG) files supplied with the option you want to install may not work on this system. These files often use overlay files that are not required on this system or reference inappropriate system resources, for example, buffer addresses. Contact your Digital service representative if you want to verify a configuration file that is not supplied on the ECU configuration diskette.

Copying the Configuration Diskette

Make a backup copy of the configuration diskette before using it for the first time. Keep the original configuration diskette in a safe place and use the backup copy when you are configuring the system. The configuration diskette must have the volume label SYSTEMCFG.

Getting Help

The ECU provides extensive help. If you have not used the ECU before, Digital recommends that you choose the `Step 1: Important EISA configuration information` menu item on the main menu and read the information that the system displays. This information describes how to configure the system and explains the difference between EISA and ISA options. The ECU also provides two other sources of help that can help you when configuring the system, as follows:

- Automatic help screens
- Help menu

Automatic Help Screens

While you use the ECU, it displays help screens and messages that explain the function of each menu and screen that it displays. Read these help messages carefully.

Help Menu

You can access the ECU Help menu by pressing the F1 function key at any time. The Help menu provides many different ways of accessing help information and on using the Help menu itself. It provides help information on all aspects of the ECU.

Important Information

Caution

When adding both EISA and ISA options, always add and configure the EISA option boards before you configure and add the ISA option boards.

Running the ECU

Summary

This section describes how to Run the ECU and access its main menu.

Running the ECU from a Diskette

Table 4–1 lists the steps that you must follow to run the ECU and access the main menu.

Table 4–1 Running the ECU

Step	Action	Result
1	If necessary, access the Setup menu in the Windows NT firmware. See Chapter 2 for information on accessing the Setup menu.	The system displays the Setup menu.
2	Insert the configuration diskette (or backup copy) into the diskette drive.	
3	Choose the `Run EISA configuration utility from floppy` menu item and press Enter.	The system runs the ECU, then displays an introductory screen.
4	Press Enter.	The ECU loads the required configuration files, then displays the ECU main menu. If it cannot find the required configuration files, it displays a message providing information on the files it needs and on where to find them.

Running the ECU from Another Location

Table 4–2 lists the steps that you must follow to run the ECU from a location other than the diskette drive and access the main menu.

Table 4–2 Running the ECU

Step	Action	Result
1	If necessary, access the Boot menu in the Windows NT firmware. See Chapter 2 for information on accessing the Boot menu.	The system displays the Boot menu.
2	Choose the `Run a program` menu item and press Enter.	The system prompts you to enter the name of the program that you want to run.
3	Enter the full device and directory specification for the ECU program (CF.EXE) and press Enter.	The system runs the ECU, then displays an introductory screen.
4	Press Enter.	The ECU loads the required configuration files, then displays the ECU main menu. If it cannot find the required configuration files, it displays a message providing information on the files it needs and on where to find them.

Quick Configuration

Summary

This section describes how to quickly configure the system using the ECU.

When to Use This Procedure

You must use this procedure only when you have not added an ISA option, or when you have added an EISA option and do not want to make changes to the configuration. The procedure described in this chapter does not provide information on customizing or displaying system or configuration settings. This information is provided in the following sections.

Quick Configuration Procedure

Table 4–3 lists the steps that you must follow to quickly configure the system.

Table 4–3 Quick Configuration Procedure

Step	Action	Result
1	If necessary, run the ECU.	The ECU displays the main menu.
2	Choose the `Step 5: Save and exit` menu item and press Enter.	The system displays the Save and exit screen.
3	Choose the `Save the configuration and restart the system` menu item and press Enter.	The ECU saves the configuration in the Nonvolatile RAM (NVRAM) and, if possible, in a file called SYSTEM.SCI on the current drive or partition. It then displays a Reboot information screen.
4	If necessary, remove the diskette from the diskette drive.	
5	Press Enter.	The system reinitializes the firmware and displays the Windows NT firmware Boot menu. The system is now configured.

Configuring an EISA Option

Summary

This section describes how to configure an EISA option within the system.

Configuration Procedure

Table 4–4 lists the steps that you must follow to configure an EISA option within the system.

Table 4–4 EISA Configuration Procedure

Step	Action	Result
1	Install the EISA option following the procedures described in Chapter 10.	
2	Run the ECU.	If the ECU locates the required configuration files on the configuration diskette, it displays the main menu. Go to step 5 for information on completing the configuration. If the ECU cannot find the required configuration files, it displays a message providing information on the files it needs and on where to find them.

(continued on next page)

Table 4–4 (Cont.) EISA Configuration Procedure

Step	Action	Result
3	Locate the configuration (.CFG) file following the instructions that the ECU displays.	There are two possible locations for the configuration file: • The configuration file is on the diskette supplied with the option. • The configuration file is on a library diskette or in a library directory on a disk drive. If you cannot locate the configuration file in either of these locations, contact your sales representative. When you locate the configuration file and copy it into the system memory, the system prompts you to insert the configuration diskette.
4	Insert the configuration diskette and press Enter.	The system copies the configuration file to the configuration diskette, then displays the main menu.
5	If you want to print the settings for the new option board to a file or printer attached to the parallel printer port, choose the `Step 4: Examine required switches` menu item and press Enter. Press F7 when the system displays the Examine required switches screen. If you do not want to print the settings, go to step 8.	The system displays the Print Settings menu.
6	Choose a menu item and press Enter, then follow the instructions that the system displays.	The system prints the settings to a file or to the printer.
7	When the system returns to the Examine required switches screen, press F10 or the escape (Esc) key to return to the main menu.	The system displays the main menu.

(continued on next page)

Table 4–4 (Cont.) EISA Configuration Procedure

Step	Action	Result
8	Choose the Step 5: Save and exit menu item to save the configuration.	The system displays menu items that allow you to save or discard the changes.
9	Choose the Save the configuration and restart the computer menu item and press Enter.	The system saves the configuration information. It then displays the Reboot information screen. The system is now configured.
10	Press Enter to restart the system.	The system returns to the Windows NT firmware Boot menu.
11	If you want, you can remove the configuration diskette.	

Configuring an ISA Option

Summary

This section describes how to configure an ISA option within the system when you have a configuration file for it.

Important Information

Note

You configure ISA options using jumpers on the option board. The ISA configuration files only provide a record of the jumper settings.

Many ISA options do not have configuration files. If you do not have a configuration file for the option, see the section entitled Using the Generic ISA Configuration File for information on configuring these options.

Configuration Procedure

Table 4–5 lists the steps that you must follow to configure an ISA option within the system.

Table 4–5 ISA Configuration Procedure

Step	Action	Result
1	Identify both the manufacturer's name and the name of the ISA option board.	You must have this information to locate a configuration file for the option, if one exists.
2	Run the ECU and, if necessary, configure the EISA option boards within the system. See Table 4–4 for information on configuring the EISA option boards.	The system displays the main menu.
3	Choose the `Step 2: Add or remove boards` menu item and press Enter.	The system displays the Add or remove boards screen, listing the EISA slots and installed options.
4	Press the insert (Ins) key to add an ISA option board to the configuration.	The system displays information asking you to locate the configuration file for the option that you want to install.
5	Locate the configuration (.CFG) file following the instructions that the ECU displays.	There are three possible locations for the configuration file: • The configuration file is on the configuration diskette. • The configuration file is on the diskette supplied with the option. • The configuration file is on a library diskette or in a library directory on a disk drive. If you cannot locate the configuration file in either of these locations, see the section entitled Using the Generic ISA Configuration File for information on using the generic ISA configuration file.

(continued on next page)

Table 4–5 (Cont.) ISA Configuration Procedure

Step	Action	Result
6	When you locate the configuration file, press Enter to select it.	Follow the instructions displayed on the screen. The system then displays the Add screen.
7	Choose an acceptable slot for the ISA option board and press Enter.	The system includes the option in the configuration.

Note

The system displays a Caution message or a Configuration Changes screen if the option that you add causes a conflict in the configuration. It marks the board causing the conflict as *Deactivated*. Follow the instructions that the system displays or see the section entitled Resolving a Conflict in the Configuration for more information.

8	Press F10 or the escape (Esc) key to return to the main menu.	The system displays the main menu.
9	Choose the `Step 4: Examine required switches` menu item and press Enter. Press F7 when the system displays the Examine required switches screen to print the settings for the new option board to a file or printer attached to the parallel printer port.	The system displays the Print Settings menu.
10	Choose a menu item and press Enter, then follow the instructions that the system displays.	The system prints the settings to a file or to the printer.
11	When the system returns to the Examine required switches screen, press F10 or the escape (Esc) key to return to the main menu.	The system displays the main menu.
12	Choose the `Step 5: Save and exit` menu item to save the configuration.	The system displays menu items that allow you to save or discard the changes.

(continued on next page)

Table 4–5 (Cont.) ISA Configuration Procedure

Step	Action	Result
13	Choose the Save the configuration and restart the computer menu item and press Enter.	The system saves the configuration information. It then displays the Reboot information screen.
14	Press Enter to restart the system.	The system returns to the Windows NT firmware Boot menu.
15	Remove the configuration diskette and turn off the system.	
16	If necessary, change the switch or jumper settings on the ISA option board to match the requirements listed in the settings file that you printed to a file or the printer.	The ISA configuration file only displays the available system settings that you can set on the ISA option board. You must manually change the settings on the board.
17	Install the ISA option following the procedures described in Chapter 10.	The system is now configured.

Using the Generic ISA Configuration File

Summary

This section describes how to configure an ISA option board within the system when you cannot locate the configuration file for it.

Generic ISA Configuration Procedure

Table 4–6 lists the steps that you must follow to configure an ISA option within the system using the generic ISA configuration file.

Table 4–6 Generic ISA Configuration Procedure

Step	Action	Result
1	Run the ECU and, if necessary, configure the EISA option boards within the system. See Table 4–4 for information on configuring the EISA option boards.	The system displays the main menu.
2	Choose the `Step 2: Add or remove boards` menu item and press Enter.	The system displays the Add or remove boards screen, listing the EISA slots and installed options.
3	Press the insert (Ins) key to add an ISA option board to the configuration.	The system displays information asking you to locate the configuration file for the option that you want to install.
4	Locate the Generic ISA Adapter Definition configuration file (!ISA0000.CFG) following the instructions that the ECU displays.	This file is normally located on the configuration diskette.
5	When you locate the configuration file, press Enter to select it.	Follow the instructions displayed on the screen. The system then displays the Add screen.
6	Choose an acceptable slot for the ISA option board and press Enter.	The system includes the option in the configuration.
7	Press F10 or the escape (Esc) key to return to the main menu.	The system displays the main menu.

(continued on next page)

Table 4–6 (Cont.) Generic ISA Configuration Procedure

Step	Action	Result
8	Choose the Step 3: View or edit details menu item and press Enter.	The system displays the View or edit details screen.
9	Scroll through this screen and locate the Generic ISA Adapter Definition configuration information.	The screen lists resource settings for the ISA option board.
10	Set the resources for the ISA option.	See the ISA option board documentation for information on the resources required by the option.
11	Press F7 to access the Advanced menu.	The system displays the Advanced menu.
12	Choose the Lock/unlock boards menu item and press Enter.	The system displays the Lock/unlock boards screen.
13	Choose the Generic ISA Adapter Definition and press Enter.	This prevents the ECU from changing the settings that the ISA option uses when it is resolving resource conflicts.
14	Press F10 or the escape (Esc) key three times.	The system displays the main menu.
15	Choose the Step 4: Examine required switches menu item and press Enter. Press F7 when the system displays the Examine required switches screen. This allows you to print the settings for the new option board to a file or printer attached to the parallel printer port.	The system displays the Print Settings menu.

Note

Locking the Generic ISA Adapter Definition may change the required switch settings for other EISA or ISA boards. Check the switch settings of all the option boards marked with an arrow on the Examine required switches screen.

(continued on next page)

Table 4–6 (Cont.) Generic ISA Configuration Procedure

Step	Action	Result
16	Choose a menu item and press Enter, then follow the instructions that the system displays.	The system prints the settings to a file or to the printer.
17	When the system returns to the Examine required switches screen, press F10 or the escape (Esc) key to return to the main menu.	The system displays the main menu.
18	Choose the `Step 5: Save and exit` menu item to save the configuration.	The system displays menu items that allow you to save or discard the changes.
19	Choose the `Save the configuration and restart the computer` menu item and press Enter.	The system saves the configuration information. It then displays the Reboot information screen.
20	Press Enter to restart the system.	The system returns to the Windows NT firmware Boot menu.
21	Remove the configuration diskette and turn off the system.	
22	If necessary, change the switch or jumper settings on the ISA option board to match the requirements listed in the settings file that you printed to a file or the printer.	The ISA configuration file only displays the available system settings that you can set on the ISA option board. You must manually change the settings on the board.
23	Install the ISA option following the procedures described in Chapter 10.	The system is now configured.

Moving an EISA Option Board to Another Slot

Summary

This section describes briefly how to move an EISA option board to a different slot in the configuration.

Moving an EISA Option Board

Table 4–7 lists the steps that you must follow to move an EISA option board to a different slot.

Table 4–7 Moving an EISA Option Board

Step	Action	Result
1	Physically remove and replace the EISA option board that you want to move following the procedure listed in Chapter 10.	When you turn on the system, access the Windows NT firmware, if necessary.
2	Run the ECU.	The system reconfigures the option boards.
3	Choose the `Step 5: Save and exit` menu item and press Enter.	The system displays the Save and exit screen.
4	Save the configuration following the information that the system displays.	The system displays the Windows NT firmware boot menu. The system is now fully reconfigured

Moving an ISA Option Board to Another Slot

Summary

This section describes briefly how to move an ISA option board to a different slot in the configuration.

Moving an ISA Option Board

Table 4–8 lists the steps that you must follow to move an ISA option board to a different slot.

Table 4–8 Moving an ISA Option Board

Step	Action	Result
1	Run the ECU, choose the `Step 2: Add or remove boards` menu item and press Enter.	The system displays the Add or remove boards screen.
2	Choose the ISA option board that you want to move and press Enter.	The system displays a Move confirmation screen.
3	Press Enter to confirm the move, select a new slot for the ISA option board, then press Enter again.	The system moves the ISA option configuration information to that slot.
4	Press F10 or the escape (Esc) key to display the main menu, choose the `Step 4: Examine required switches` menu item, then press Enter.	The system displays the Examine required switches screen.
5	Print the configuration settings to a file or the printer.	
6	Return to the main menu, choose the `Step 5: Save and exit` menu item and press Enter.	The system displays the Save and exit screen.
7	Save the configuration following the information that the system displays.	The system displays the Windows NT firmware boot menu. The system is now fully reconfigured
8	Remove and replace the ISA option that you want to move following the procedures listed in Chapter 10.	The system is now reconfigured.

Removing an Option Board

Summary

This section describes briefly how to remove an option board from the configuration.

Removing an Option Board

Table 4–9 lists the steps that you must follow to remove an option board from the configuration.

Table 4–9 Removing an Option Board

Step	Action	Result
1	Remove the option board following the procedures listed in Chapter 10.	When you turn on the system, access the Windows NT firmware, if necessary.
2	If you removed an EISA option board, follow the procedure listed in Table 4–3.	
3	If you removed an ISA option board, run the ECU, then choose the `Step 2: Add or remove boards` menu item, and delete the configuration for the ISA option board that you removed.	The system removes the ISA board configuration information from the display.
4	Return to the main menu, then choose the `Step 5: Save and exit` menu item, and save the new configuration.	The system is now reconfigured.

Changing Board Function and Resource Settings

Summary

This section describes how to change the function and resource settings used by an option board.

Function and Resource Settings

When you access the View or edit details screen, many of the option boards listed in the configuration have function settings that you can change. For example, some network option boards allow you to set the network interface type or the network boot time-limit. You can change these settings to determine how the board operates.

You can also change the resource settings that the board uses, for example, interrupt request (IRQ) lines, direct memory access (DMA) channels, input/output (I/O) ports, or memory buffer addresses and sizes. These resource settings request system resources that are limited and cannot be shared between option boards. For example, if one board uses IRQ 5, no other board can use this IRQ. When more than one board requests the same resource, a configuration conflict occurs. Some function settings also have resource settings associated with them.

Changing Function and Resource Settings

Table 4–10 lists the steps that you must follow to change a function or resource setting.

Table 4–10 Changing Function and Resource Settings

Step	Action
1	Access the View or edit details screen.
2	Locate the function or resource that you want to change by using the up arrow, down arrow, page up, or page down keys to scroll through the screen.
3	Choose the function or resource and press Enter.
4	Choose a new setting.
5	If you want to change a resource setting associated with a function setting, choose the function setting and press F6. If a resource is marked with a plus sign (+), you can change it.
6	Press the escape (Esc) key to choose another function or resource setting, or press Enter to return to the View or edit details screen.
7	If the verification mode is set to automatic and the change that you make causes a configuration conflict, the system either displays a suggested configuration change or deactivates the board that caused the conflict. See the section entitled Resolving a Conflict in the Configuration for information on resolving these conflicts.
8	If the verification mode is set to manual, press F8 to verify the configuration. If there is a conflict in the configuration, the system marks the board function or resource setting causing the conflict with an asterisk (*). See the section entitled Resolving a Conflict in the Configuration for information on resolving these conflicts.

Advanced ECU Features

Summary

This section describes how to use the features provided by the Advanced menu in the ECU.

Accessing the Advanced Menu

To access the Advanced menu, access the View or edit details screen and press F7.

Advanced Features

Table 4–11 describes the features that are available in the Advanced menu.

Table 4–11 Advanced Features

Feature	Description
Lock/unlock boards	This feature allows you to lock or unlock the settings corresponding to an option board. When you lock the board's settings, the ECU cannot change that board's settings to automatically resolve configuration conflicts. You must lock an option board's settings in the following situations: • When adding an ISA option board using the Generic ISA Adapter configuration file • When a particular option board uses system resources that you do not want changed You may be required to unlock or remove an option board if the system detects a configuration conflict that it cannot resolve by changing another option board's settings.

(continued on next page)

Table 4–11 (Cont.) Advanced Features

Feature	Description
View additional system information menu	This feature allows you to view the following information: • Option board specifications • System configuration specifications • Used resources • Available resources The Used resources and Available resources screens are helpful when you are trying to resolve a configuration conflict detected by the system.
Set verification mode menu	This feature allows you to set the verification mode to automatic or manual. These modes have the following uses: • When the system is in automatic mode (default) it attempts to resolve configuration conflicts automatically. When you cause a conflict by changing a resource, the system displays a Configuration Changes screen that displays the resources that it needs to change in order to resolve the conflict. You can accept or reject the proposed change. • When the system is in manual mode, you must verify the configuration after you change a resource. Press F8 on the View or edit details screen to verify the configuration. If the system detects a conflict, it indicates the board settings on the option boards that are in conflict. You can now try changing the resources for these settings to resolve the conflict.
Maintain SCI files menu	This feature allows you to perform the following tasks: • Make a backup system configuration information (SCI) file. • Restore or import a previously created SCI file

Resolving a Conflict in the Configuration

Summary

This section provides information on resolving conflicts in the configuration.

Causes of Configuration Conflicts

Option boards cause configuration conflicts when more than one option board requests the same system resource, for example, the same IRQ or DMA. To resolve the conflict, you must change the settings on one of the boards causing the conflict.

Detecting Conflicts

If the verification mode is set to automatic, the system automatically informs you when you perform an action that causes a configuration conflict. If the verification mode is set to manual, you must verify the configuration before you exit the ECU by pressing F8 on the View or edit details screen. If there is a configuration conflict, the system displays a warning message and indicates the board settings that are causing the conflict.

Resolving the Conflict

Table 4–12 lists the steps that you must follow to resolve a conflict in the configuration.

Table 4–12 Resolving Configuration Conflicts

Step	Action
1	If the verification mode is set to automatic, and the system suggests an acceptable resource setting change that resolves the conflict, press Enter to resolve the conflict.
2	If the conflict remains, set the verification mode to manual if necessary.
3	Access the View or edit details screen and press F8 to verify the configuration.

(continued on next page)

Table 4–12 (Cont.) Resolving Configuration Conflicts

Step	Action
4	Examine the View or edit details screen for the board settings marked with an asterisk(*). If necessary, view the system resources used by these settings.
5	Write down the resource type and value that the board uses for the settings causing the conflict.
6	Access the Advanced menu to examine the Available resources screen to determine if you can change the resource settings of any of the boards causing the conflict to an available setting.
7	If you cannot change the resource settings of any of the boards causing the conflict to an available resource, examine the View or edit details screen for boards that are locked.
8	The board causing the conflict may be able to use the resource settings of a locked board. If possible, unlock the board and change any of the resources used by that board to resolve the conflict. See the documentation supplied with the locked option board for information on the valid resource settings for that board.
9	If you follow steps 1 to 8 and the conflict remains, you must remove one of the option boards causing the conflict.

5

Using the OpenVMS and OSF/1 Console

Introduction

This chapter describes how to use the OpenVMS and OSF/1 console to display the system devices, display the system configuration, and set system defaults in the OpenVMS and OSF/1 console.

In This Chapter

This chapter contains the following sections:

- Displaying the OpenVMS and OSF/1 System Device Display
- Displaying the System Configuration
- Setting the Default Boot Device for OpenVMS and OSF/1
- Setting the Default Boot Flags for OpenVMS and OSF/1
- Setting the Default Startup Action
- Setting the Default Keyboard Language (DECpc AXP 150 Systems Only)
- Setting the Default Operating System from the OpenVMS and OSF/1 Console
- Setting the HOST SCSI ID

Displaying the OpenVMS and OSF/1 System Device Display

Summary

This section describes how to display the system device display and determine the storage and boot devices installed in the system.

Displaying the System Device Display

Example 5–1 shows the command that you must enter to display the system device display and a sample of the display that this command generates.

Using the System Device Display

You can use the system device display for the following tasks:

- Identifying the OpenVMS and OSF Boot Devices
- Displaying information on the devices in the system
- Identifying errors in the system device configuration

  See Chapter 7 for information on using the system device display for identifying errors in the system device configuration.

Identifying the Boot Devices

Table 5–1 lists the device names that you can use as boot devices in the OpenVMS and OSF/1 console.

Table 5–1 OpenVMS and OSF/1 Console Device Names

Device Name	Description
ERA0 or EZ0A	ERA0 (OpenVMS) or EZ0A (OSF/1) represents the Ethernet device. You use this device when booting the system over a network.
DKA0	DKA0 represents a disk drive with a SCSI ID of 0. It is the default boot device when the system is shipped.
DKA*n*00	DKA*n*00 represents a CD-ROM drive, disk drive, or diskette drive with a SCSI ID of *n*, where *n* is a number in the range 1 to 6.
MKA*n*00	MKA*n*00 represents a tape drive with a SCSI ID of *n*, where *n* is a number in the range 1 to 6.

System Device Display

Example 5–1 shows a sample system device display.

Example 5–1 Updated SHOW DEVICE Display

```
>>> SHOW DEVICE

  BOOTDEV      ADDR      DEVTYPE    RM/FX    DEVNAM      REV     NUMBYTES
  -------      ----      -------    -----    ------      ---     --------
  ERA0         08-00-2B-2E-2E-C3
  DVA0         PC Floppy DISK       RM
  SCSI Devices..
  DKA0         A/0/0     DISK       FX       RZ25        0700    426.25MB
  MKA200       A/2/0     TAPE       RM       TZK10       03B8    ......
  DKA400       A/4/0     RODISK     RM       RRD42       4.5d    ......
  HOST         A/5/0     PROC                AHA1742A    G
```

Displaying the OpenVMS and OSF/1 System Device Display, *continued*

Displaying System Device Information

You can use the system device display to show useful information on the devices installed in the system. Table 5–2 shows how to interpret the information contained in the system device display.

Table 5–2 Interpreting the System Device Display

Item	Description
BOOTDEV (❶)	The BOOTDEV column lists the software device names of the devices connected to the system. Table 5–1 explains some of these device names. In addition, the system device display contains the device names DVA0 or FD0 and HOST. DVA0 (OpenVMS) and FD0 (OSF/1) are the device names of the diskette drive connected to the SCSI adapter using the PC/AT-standard interface and HOST is the SCSI adapter.
ADDR (❷)	The ADDR column lists the Ethernet addresses and the SCSI addresses of the devices on the SCSI bus. The SCSI addresses have the following format: • The letter represents the SCSI bus identifier, in this case A. If you have two SCSI adapters, the second SCSI bus has the identifier B. • The first number represents the SCSI ID of the device. SCSI ID 0 is the default SCSI ID for the system disk. SCSI ID 7 is reserved for the SCSI controller. • The second number represents the logical unit number (lun) of the device.
DEVTYPE (❸)	The DEVTYPE column lists the device type of the devices on the SCSI bus. The system uses the following device types: DISK, TAPE, RODISK (read-only) and PROC (SCSI controller).
RM/FX (❹)	The RM/FX column lists whether the SCSI device uses removable (RM) or fixed (FX) media.

(continued on next page)

Table 5–2 (Cont.) Interpreting the System Device Display

Item	Description
DEVNAM (❺)	The DEVNAM column lists the manufacturer's device name for each SCSI device.
REV (❻)	The firmware revision of the device.
NUMBYTES (❼)	The NUMBYTES column lists the capacity of the SCSI device, when the system can determine it.

System Device Display

Example 5–2 shows a sample system device display.

Example 5–2 Updated SHOW DEVICE Display

```
>>> SHOW DEVICE
   ❶          ❷          ❸          ❹        ❺          ❻       ❼
  BOOTDEV     ADDR       DEVTYPE    RM/FX    DEVNAM     REV     NUMBYTES
  -------     ----       -------    -----    ------     ---     --------
  ERA0        08-00-2B-2E-2E-C3
  DVA0        PC Floppy DISK         RM
  SCSI Devices..
  DKA0        A/0/0      DISK       FX       RZ25       0700    426.25MB
  MKA200      A/2/0      TAPE       RM       TZK10      03B8    ......
  DKA400      A/4/0      RODISK     RM       RRD42      4.5d    ......
  HOST        A/5/0      PROC                AHA1742A   G
```

Displaying the System Configuration

Summary

This section describes how to display the system configuration display. It also describes how to use this display.

Displaying the System Device Display

Example 5–3 shows the command that you must enter to display the system device display and a sample of the display that this command generates.

Using the System Configuration Display

You can use the system device display for the following tasks:

- Reviewing the results of the power-up tests
- Identifying errors in the EISA configuration

See Chapter 7 for information on using the system configuration display for these tasks.

Interpreting the Display

Table 5–3 describes how to interpret the system configuration display.

Table 5–3 Interpreting the System Configuration Display

Item	Description
❶	This column lists the EISA slot numbers and the device identifiers of any EISA option boards installed in those slots. The system does not list ISA devices in this column.
❷	This column lists the power-up and self-test device names of the devices that the system detected when it last ran the power-up tests.
❸	This column lists the results of the most recent power-up or self-test for each device in the display.

SHOW CONFIG Display

Example 5–3 shows a sample of a SHOW CONFIG display.

Example 5–3 Sample SHOW CONFIG Display

```
>>> SHOW CONFIG

DEC 2000 Model 300 AXP - Rom Version nnn
Digital Equipment Corporation
VMS PAL Xn.nn/OSF PAL Xn.nn - Built on 19-MAY-1992 13:38:25.71
    ❶           ❷                ❸
Eisa Info     Devnam            Devstat
---------     --------          -------
              CPU          OK EV4 P2
              MEM          OK 32MB
              NVR          OK
              SCC          OK
               IT          OK
              KBD          OK
              LPT          OK
1 DEC4220      NI          OK 09-01-2B-2F-3D-D4
2
3
4
5
6 ADP0002    SCSI          OK
```

Setting the Default Boot Device for OpenVMS and OSF/1

Summary

This section describes how to set the default boot device for the OpenVMS and OSF/1 operating systems.

Valid Settings

You can use any of the boot devices listed in the section entitled Displaying the System Device Display. In addition, the system also accepts the following settings:

- A list

  You can enter a list of valid device names separated by commas (,). The system attempts to boot from each device in turn until it is successful. If it fails to boot from the last device, it returns to the console prompt.

- A period (.)

  A period sets the boot device value to a null value.

Setting the Default Boot Device

Table 5–4 lists the steps that you must follow to set the default boot device for the OpenVMS or OSF/1 operating systems.

Table 5–4 Setting the Default Boot Device

Step	Action	Result
1	If necessary, access the OpenVMS and OSF/1 console.	The system displays the console prompt (>>>).
2	Enter the SHOW DEVICE command at the console prompt.	The system displays a list of the system devices.

(continued on next page)

Table 5–4 (Cont.) Setting the Default Boot Device

Step	Action	Result
3	Enter commands similar to those shown in Example 5–4 at the console prompt, using the device name or names that you require.	The first command displays the current default boot device. The second command resets the default boot device to the device or devices that you specify. Table 5–1 describes the OpenVMS and OSF/1 device name conventions. In the example, the command changes the boot device to a list including the Ethernet device and the system disk. The system stores the boot device setting that you specify in the system nonvolatile random-access memory (NVR). This setting is maintained by the NVR battery when the system is turned off.

Important Information

Caution

The OpenVMS and OSF/1 console does not verify the device names that you enter. It treats the values as a string.

Default Boot Device Example

Example 5–4 shows the commands that you must enter in the OpenVMS and OSF/1 console to reset the default boot device.

Example 5–4 Default Boot Device Commands

```
>>> SHOW BOOTDEF_DEV

BOOTDEF_DEV = DKA0
>>> SET BOOTDEF_DEV ERA0,DKA0

BOOTDEF_DEV = ERA0,DKA0
>>>
```

Setting the Default Boot Flags for OpenVMS and OSF/1

Summary

This section describes how to set the default boot flags for OpenVMS and OSF/1.

OpenVMS and OSF/1 Boot Flags

See your operating system documentation for information on the specific boot flags that you can set when booting either OpenVMS or OSF/1.

Setting the Default Boot Flags

Table 5–5 lists the steps that you must follow to set the default boot flags.

Table 5–5 Setting the Default Boot Flags

Step	Action	Result
1	If necessary, access the OpenVMS and OSF/1 console.	The system displays the console prompt (>>>).
2	Enter commands similar to those shown in Example 5–5 at the console prompt.	The first command displays the current default boot flags. The second command resets the default boot flags for OpenVMS to 0,1. The system stores the boot flags setting that you specify in the system nonvolatile random-access memory (NVR). This setting is maintained by the NVR battery when the system is turned off.

Important Information

Caution

The OpenVMS and OSF/1 console does not verify the boot flags that you enter. It treats the values as a string.

Default Boot Flags Example

Example 5–5 shows the commands that you must enter in the OpenVMS and OSF/1 console to reset the default boot flags for OpenVMS.

Example 5–5 Default Boot Flags Commands

```
>>> SHOW BOOT_OSFLAGS
BOOT_OSFLAGS = 0,0
>>>
>>> SET BOOT_OSFLAGS 0,1
BOOT_OSFLAGS = 0,1
>>>
```

Setting the Default Startup Action

Summary

This section describes how to set the default startup action for the OpenVMS and OSF/1 operating systems. The startup action determines the action of the system when you turn it on or when it fails.

Startup Action Values

Table 5–6 lists the startup (or recovery) action values and describes the results of each value.

Table 5–6 Startup Action Values

Value	Description
RESTART	The system boots automatically when it is turned on or after it fails.
BOOT	The system boots automatically when it is turned on. It halts after a system failure.
HALT	If the OS_TYPE environment variable is set to OSF or VMS, the system halts in the OpenVMS and OSF/1 console when the system is turned on. The system halts in the OpenVMS and OSF/1 console after the system fails.

Setting the Startup Action

Table 5–7 lists the steps that you must follow to set the default startup action.

Table 5–7 Setting the Default Startup Action

Step	Action	Result
1	If necessary, access the OpenVMS and OSF/1 console.	The system displays the console prompt (>>>).
2	Enter commands similar to those shown in Example 5–6 at the console prompt.	The first command displays the current default startup action. The second command resets the default startup action to BOOT. The system stores the startup action setting that you specify in the system nonvolatile random-access memory (NVR). This setting is maintained by the NVR battery when the system is turned off.

Default Startup Action Example

Example 5–6 shows the commands that you must enter in the OpenVMS and OSF/1 console to reset the default startup action.

Example 5–6 Default Startup Action Commands

```
>>> SHOW AUTO_ACTION

AUTO_ACTION = HALT
>>>
>>> SET AUTO_ACTION BOOT

AUTO_ACTION = BOOT
>>>
```

Setting the Default Keyboard Language (DECpc AXP 150 Systems Only)

Summary

This section describes how to set the default keyboard language from the OpenVMS and OSF/1 console.

Keyboard Languages

You can set the keyboard to support two languages: American English (US) or United Kingdom English (UK).

Setting the Keyboard Language

Table 5–8 lists the steps that you must follow to set the default keyboard languages.

Table 5–8 Setting the Default Keyboard Language

Step	Action	Result
1	If necessary, access the OpenVMS and OSF/1 console.	The system displays the console prompt (>>>).
2	Enter commands similar to those shown in Example 5–7 at the console prompt.	The first command displays the current default keyboard language. The second command resets the default keyboard language to American English (US). After you press Enter, the system displays the new default keyboard language. The system stores the default keyboard language setting that you specify in the system nonvolatile random-access memory (NVR). This setting is maintained by the NVR battery when the system is turned off.

Default Keyboard Language Example

Example 5–7 shows the commands that you must enter in the OpenVMS and OSF/1 console to reset the default keyboard language.

Example 5–7 Default Keyboard Language Commands

```
>>> SHOW KEYBOARD
KEYBOARD = UK
>>>
>>> SET KEYBOARD US
KEYBOARD = US
>>>
```

Setting the Default Operating System from the OpenVMS and OSF/1 Console

Summary

This section describes how to set the default operating system from the OpenVMS and OSF/1 console.

Operating System Names

Table 5–9 lists the operating system names that you can use in the OpenVMS and OSF/1 console commands.

Table 5–9 OpenVMS and OSF/1 Console Operating System Names

Operating System Name	Description
NT	Windows NT operating system
OSF	OSF/1 operating system
VMS	OpenVMS operating system

Setting the Operating System

Table 5–10 lists the steps that you must follow to set the default operating system from the OpenVMS or OSF/1 console.

Table 5–10 Setting the Default Operating System

Step	Action	Result
1	If necessary, access the OpenVMS and OSF/1 console.	The system displays the console prompt (>>>).
2	Enter commands similar to those shown in Example 5–8 at the console prompt.	The first command displays the current default operating system. The second command resets the default operating system to Windows NT. The system stores the operating system setting that you specify in the system nonvolatile random-access memory (NVR). This setting is maintained by the NVR battery when the system is turned off.

Default Operating System Example

Example 5–8 shows the commands that you must enter in the OpenVMS and OSF/1 console to reset the default operating system.

Example 5–8 Default Operating System Commands

```
>>> SHOW OS_TYPE

OS_TYPE = VMS
>>>
>>> SET OS_TYPE NT

OS_TYPE = NT
>>>
```

Setting the HOST SCSI ID

Summary

This section describes how to set the SCSI adapter (HOST) SCSI ID on either SCSI bus A or SCSI bus B.

SCSI Buses

The system supports up to two SCSI adapters. Each SCSI adapter provides a SCSI bus. These SCSI buses are identified by the letters A and B.

SCSI IDs

Each device on a SCSI bus must have a unique SCSI ID. These IDs are in the range 0 to 7. The SCSI adapter default SCSI ID is 7. It is possible to have two SCSI adapters on the same bus, for example, in different systems, connected to the same external devices and the internal devices in both systems. In situations like this, you must change the default SCSI ID of one of the SCSI adapters.

Setting the HOST SCSI ID

Table 5–11 lists the steps that you must follow to set the default SCSI ID on the SCSI adapter.

Table 5–11 Setting the HOST SCSI ID

Step	Action	Result
1	If necessary, access the OpenVMS and OSF/1 console.	The system displays the console prompt (>>>).
2	Enter commands similar to those shown in Example 5–9 at the console prompt.	The first command displays the current default SCSI ID of the SCSI adapter on SCSI bus A. The second command resets this default SCSI ID to ID 6. The system stores the SCSI ID setting that you specify in the system nonvolatile random-access memory (NVR). This setting is maintained by the NVR battery when the system is turned off.

HOST SCSI ID Example

Example 5–9 shows the commands that you must enter in the OpenVMS and OSF/1 console to reset the default SCSI ID of the SCSI adapter.

Example 5–9 Default HOST SCSI ID Commands

```
>>> SHOW SCSI_A

SCSI_A = 00000007
>>>
>>> SET SCSI_A 6

SCSI_A = 00000006
>>>
```

6

Troubleshooting the System

Introduction

This chapter describes how to troubleshoot the system using troubleshooting tables.

In This Chapter

This chapter contains the following sections:

- Before You Begin
- Determining the Problem
- Power-Up Problems
- Boot Problems
- Keyboard and Mouse Problems (DECpc AXP 150 Systems Only)
- SCSI Drive Problems
- Diskette Drive Problems
- Network and Option Board Problems

Before You Begin

Summary

This section describes the procedure that you must use to troubleshoot system problems.

Problem Solving Methods

There are two ways to identify and solve problems with the system, as follows:

- Use the troubleshooting tables in this chapter to identify and, if possible, correct the problem.
- Use the procedures listed in Chapter 7 to identify the problem and then report it to your Digital service representative.

What You Must Do First

Table 6–1 lists the steps that you must follow to identify and possibly correct system problems.

Table 6–1 Problem Identification and Correction Procedure

Step	Action
1	When you detect a system problem, try to match the problem with one of the titles of the other sections in this chapter.
2	If you can match the problem with a section title, use the troubleshooting tables in that section to further isolate the problem.
3	Check the causes of the symptom in the Possible Cause column of the troubleshooting table. If the troubleshooting table lists more than one possible cause, check the possible causes and their suggested solutions in the order listed.
4	Follow the advice in the Suggested Solution column.
5	Follow the procedures listed in Chapter 7 if you cannot match the problem in the sections of this chapter or if the problem persists after you follow the advice in the troubleshooting tables.
6	If the problem still persists, contact your Digital service representative.

Determining the Problem

Summary

This section lists the types of problems described in the troubleshooting tables.

Troubleshooting Table Titles

Table 6–2 lists the troubleshooting table titles and their associated table numbers.

Table 6–2 Troubleshooting Table Titles and Numbers

Title	Number
Power-Up Problems	Table 6–3
Boot Problems	Table 6–4
Keyboard and Mouse Problems	Table 6–5
Generic SCSI Drive Problems	Table 6–6
RRD42™ CD-ROM Drive Problems	Table 6–7
TLZ06 Tape Drive Problems	Table 6–8
TZK10 Tape Drive Problems	Table 6–9
RX™26 Diskette Drive Problems	Table 6–10

Network Problems

See the section entitled Network and Option Board Problems for information on troubleshooting network problems.

Power-Up Problems

Summary

This section describes possible power-up and operating system boot problems.

Power-Up Troubleshooting

Table 6–3 lists possible problems that the system may experience when you turn it on. It suggests possible causes and associated suggested solutions.

Table 6–3 Power-Up Problems

Symptom	Possible Cause	Suggested Solution
The system unit fan is off or the power light is off.	The power cord is not connected. The power cord may be faulty. The power socket may not be working. The power cord fuse may have blown.	Make sure that all the power cords are connected correctly at both ends. Try a power cord that works or test the power socket with an appliance that works.
	The overload protection circuitry of the power supply may have shut down because of an abnormal condition on the power line.	Turn the system off and then turn it back on.
	The power supply unit (PSU) is faulty.	Contact your Digital service representative.
The power-up display does not show after 20 seconds.	The monitor or terminal is not turned on.	Turn on the monitor or terminal.
	The monitor or terminal brightness and contrast controls are incorrectly set.	Adjust the monitor or terminal contrast and brightness controls.

(continued on next page)

Table 6–3 (Cont.) Power-Up Problems

Symptom	Possible Cause	Suggested Solution
	The terminal or monitor cable is not connected correctly.	Make sure that all the cables are connected at both ends.
	The terminal cable is not connected to the correct serial port.	Check the serial port to which the terminal cable is connected. Make sure that it is connected to the left-hand serial port.
	The power cord is not connected. The power cord may be faulty. The power socket may not be working.	Make sure that all the power cords are connected correctly at both ends. Try a power cord that works or test the power socket with an appliance that works.
	The terminal or monitor fuse may have blown.	Replace the blown terminal or monitor fuse. See the terminal or monitor documentation.
	The terminal settings may be incorrect.	See the *DECpc AXP 150 and DEC 2000 Model 300 AXP User Information* manual for the list of correct terminal settings. See the terminal documentation for information on setting up the terminal.
	The port to which the terminal or monitor connects may be faulty.	Try connecting the terminal or monitor to another system using the same terminal or monitor cable. If the terminal or monitor works, the port to which the terminal or monitor was connected is faulty. Contact your Digital service representative.

(continued on next page)

Table 6–3 (Cont.) Power-Up Problems

Symptom	Possible Cause	Suggested Solution
	The terminal, monitor, or cable may be faulty.	Connect the cable and the terminal or monitor to another system. If the connected terminal or monitor works, the system connector or connector circuitry is faulty. Otherwise, the cable or the terminal or monitor is faulty. If the terminal or monitor still fails to work, try another cable if possible. If the terminal or monitor works, the original cable was faulty. Otherwise, the terminal or monitor is faulty.
The power-up display contains question marks or the word *failed*.	A diagnostic error has occurred.	See Chapter 7 for information on determining the cause of the error.
The power-up test display contains unexpected characters.	The terminal settings are incorrect or the system circuitry is faulty.	Make sure the terminal settings are correct, then run the power-up test again. If the terminal is set correctly, contact your Digital service representative.
The NVR test indicates one of the following error messages: ?? 00 NVR 0020 or ?? 00 NVR 0004	The NVR battery is faulty.	Replace the battery following the procedure listed in Chapter 12.

Boot Problems

Summary This section describes possible operating system boot problems.

Boot Troubleshooting Table 6–4 lists possible problems that the system may experience when you try to boot the operating system. It suggests possible causes and associated suggested solutions.

Table 6–4 Boot Problems

Symptom	Possible Cause	Suggested Solution
The system fails to boot the operating system.	(DEC 2000 Model 300 AXP systems only) The system defaults are incorrectly set.	Set the system defaults as described in Chapter 5, then try booting the system again. In particular, examine the settings of the following system defaults: AUTO_ACTION, BOOTDEF_DEV, and OS_TYPE. If the system still fails to boot, contact your Digital service representative.
	(DEC 2000 Model 300 AXP systems only) The boot device is incorrectly configured.	Use the SHOW BOOTDEF_DEV command to display the boot device, then make sure that the setting is correct.
	(DECpc AXP 150 systems only) The boot selection is incorrectly set.	Follow the instructions in Chapter 3 for information on checking the boot selections.
	There is a hardware problem or configuration problem with the boot device.	See the section entitled SCSI Drive Problems for more information.
	There is a software problem or the operating system is not installed.	See your operating system documentation for more information.

Keyboard and Mouse Problems (DECpc AXP 150 Systems Only)

Summary

This section describes possible keyboard and mouse problems with the DECpc AXP 150 system.

Keyboard and Mouse Troubleshooting

Table 6–5 lists possible problems that you may experience when you try to use the mouse or the keyboard on DECpc AXP 150 systems. It suggests possible causes and associated suggested solutions.

Table 6–5 Keyboard and Mouse Problems

Symptom	Possible Cause	Suggested Solution
The monitor does not display the character that you type.	The keyboard cable is incorrectly connected.	Make sure that the keyboard cable is connected correctly in the keyboard connector.
	The keyboard has failed.	Replace the keyboard. If the problem persists, contact your Digital service representative.
The monitor displays a message indicating a keyboard error.	The keyboard is not connected correctly.	Make sure that the keyboard is connected to the keyboard port.
The mouse pointer is displayed on the monitor, but does not move correctly.	The mouse is connected incorrectly.	Make sure that the mouse cable is connected correctly in the mouse connector.
	The mouse ball is dirty.	Remove the ball from the mouse and clean it in a lukewarm, mild-soap solution. Do not use organic solvents to clean the ball, for example, paint thinner. These solvents can damage the coating. Dry the mouse ball and replace it securely.

(continued on next page)

Table 6–5 (Cont.) Keyboard and Mouse Problems

Symptom	Possible Cause	Suggested Solution
The mouse pointer does not show on the monitor.	The mouse is connected incorrectly or the mouse cable is loose.	Make sure that the mouse cable is connected correctly in the mouse connector.
	The system is in console mode.	The mouse pointer is displayed only when the operating system is running. Boot the operating system.
	The mouse is faulty.	Replace the mouse. You can order a replacement three-button mouse from your Digital sales representative.

SCSI Drive Problems

Summary

This section describes possible SCSI drive problems.

Generic SCSI Drive Troubleshooting

Table 6–6 lists possible problems that you may experience when you try to use the SCSI drives. It suggests possible causes and associated suggested solutions.

Table 6–6 Generic SCSI Drive Problems

Symptom	Possible Cause	Suggested Solution
You cannot access the software or data on the drive.	The SCSI ID of the drive is not unique or the SCSI drive cables are connected incorrectly.	See Chapter 7 for information on displaying the SCSI device configuration. If the device is not listed in the display, check the SCSI cabling and the drive's SCSI ID.
	The SCSI drive is faulty.	Contact your Digital service representative.
	The SCSI controller is faulty.	See Chapter 7 for information on running diagnostic tests. If the SCSI device fails, contact your Digital service representative.

RRD42 CD-ROM Drive Troubleshooting

Table 6–7 lists possible problems that you may experience when you try to use the RRD42 CD-ROM drive. It suggests possible causes and associated suggested solutions.

Table 6–7 RRD42 CD-ROM Drive Problems

Symptom	Possible Cause	Suggested Solution
You cannot read from the device.	Generic SCSI problem.	See Table 6–6 for information on possible causes and suggested solutions.
The drive does not accept the caddy.	The disc is upside-down in the caddy or it is not placed correctly in the caddy.	Remove the disc from the caddy and reinsert it properly.
	A caddy is already present.	Eject the caddy and replace it with a new one.
The eject button fails to eject the caddy.	The eject button is disabled by software.	Re-enable the eject button or manually eject the caddy.
	The system does not have power.	Set the system unit on/off switch to the on position and press the eject button again.
	The RRD42 compact disc drive is faulty.	If you want to eject the caddy manually, see the *DECpc AXP 150 and DEC 2000 Model 300 AXP User Information* manual for instructions. If the problem persists, contact your Digital service representative.

SCSI Drive Problems, *continued*

TLZ06 Tape Drive Troubleshooting

Table 6–8 lists possible problems that you may experience when you try to use the TLZ06 tape drive. It suggests possible causes and associated suggested solutions.

Table 6–8 TLZ06 Tape Drive Problems

Symptom	Possible Cause	Suggested Solution
You cannot read from or write to the device.	Generic SCSI problem.	See Table 6–6 for information on possible causes and suggested solutions.
The system cannot write to the cassette tape.	The write-protect switch is in the write-protect position.	If the write-protect LED is on, remove the tape, reset the switch and try writing to the tape again. If the problem persists, contact your Digital service representative.
	The cassette tape is not loaded.	Load the cassette tape.
The write-protect LED flashes.	The tape drive heads are dirty or the tape is worn.	Clean the drive heads (see the *DECpc AXP 150 and DEC 2000 Model 300 AXP User Information* manual). If the problem persists, use a new tape.
The data read from the cassette tape is corrupted.	The tape drive heads may be dirty.	See the *DECpc AXP 150 and DEC 2000 Model 300 AXP User Information* manual for information on cleaning the drive heads.

TZK10 Tape Drive Troubleshooting

Table 6–9 lists possible problems that you may experience when you try to use the TZK10 tape drive. It suggests possible causes and associated suggested solutions.

Table 6–9 TZK10 Tape Drive Problems

Symptom	Possible Cause	Suggested Solution
You cannot read from or write to the device.	Generic SCSI problem.	See Table 6–6 for information on possible causes and suggested solutions.
The data read from the QIC tape is corrupted.	The drive head is dirty.	Clean the drive head. See the *DECpc AXP 150 and DEC 2000 Model 300 AXP User Information* manual for information on cleaning the drive heads.
The system cannot write to the QIC tape.	The write-protect switch is in the write-protect position.	Remove the QIC tape, reset the switch, and try writing to the QIC tape again. If the problem persists, contact your Digital service representative.
The system cannot read from or write to the QIC tape.	The QIC tape may be faulty.	Remove the QIC tape. If the amber LED turns off when you remove the QIC tape, the tape is probably faulty. Try a different QIC tape. If the amber LED stays on or if the problem persists, contact your Digital service representative.

Diskette Drive Problems

RX26 Diskette Drive Troubleshooting

Table 6–10 lists possible problems that you may experience when you try to use the RX26 diskette drive. It suggests possible causes and associated suggested solutions.

Table 6–10 RX26 Diskette Drive Problems

Symptom	Possible Cause	Suggested Solution
The system cannot read from or write to the diskette.	The diskette is not formatted.	Format the diskette.
	The diskette is not inserted correctly.	Eject the diskette. Try inserting the diskette again.
	The diskette is faulty.	Try a different diskette.
	The diskette density is incorrect.	The RX26 can both read and write to high-density (HD) or extra-density (ED) diskettes. It can only read data from standard 1M-byte diskettes. See the *DECpc AXP 150 and DEC 2000 Model 300 AXP User Information* manual for more information on diskette compatibility.
	The diskette drive head may be dirty.	See the *DECpc AXP 150 and DEC 2000 Model 300 AXP User Information* manual for information on cleaning the diskette drive head.
	The ID select switch is in the wrong position or the drive power or signal cable may be disconnected.	Check the position of the ID select switch and make sure that the signal and power cables are correctly connected.

(continued on next page)

Table 6–10 (Cont.) RX26 Diskette Drive Problems

Symptom	Possible Cause	Suggested Solution
	The diskette drive is faulty.	Contact your Digital service representative.
	The diskette drive controller may be faulty.	See Chapter 7 for information on running diagnostic tests. If the SCSI device fails, contact your Digital service representative.
The system can read from but cannot write to a diskette.	The write-protect switch is in the write-protect position.	Eject the diskette and reset the switch. Try writing to the diskette again.
	The diskette is a 1M-byte diskette.	The RX26 can write only to HD or ED diskettes. See the *DECpc AXP 150 and DEC 2000 Model 300 AXP User Information* manual for more information on diskette compatibility.
The diskette does not eject.	The diskette is positioned incorrectly in the drive.	Gently press the diskette with your finger and reposition it. Press the eject button again.

Network and Option Board Problems

Summary

This section describes possible network and option board problems.

Network Troubleshooting

The system may experience different network problems depending on the type of network option board that you have installed. See the option board documentation for information on troubleshooting network problems.

Option Board Troubleshooting

The system may experience different problems depending on the types of option board that you have installed. See the option board documentation for information on troubleshooting option board problems.

7

Running Diagnostics

Introduction

This chapter describes how to use the OpenVMS and OSF/1 console commands to detect problems with the system. It also provides a diagnostic procedure that lists the order in which Digital recommends that you use these commands.

Important Information

Note

If necessary, you must switch from the Windows NT firmware to the OpenVMS and OSF/1 console before using the procedures described in this chapter. See Chapter 1 for information on performing this task.

In This Chapter

This chapter contains the following sections:

- Diagnostic Procedure
- Running Power-Up Tests
- Running Self-Tests
- Configuration Display
- System Device Display
- Interpreting Diagnostic LEDs

Diagnostic Procedure

Summary

This section describes the order in which Digital recommends that you run the diagnostic commands when troubleshooting the system.

Diagnostic Procedure

Table 7–1 lists the order in which Digital recommends that you run the diagnostic commands when troubleshooting the system.

Table 7–1 Diagnostic Procedure

Step	Action	Result
1	Troubleshoot the system following the procedures listed in Chapter 6.	The troubleshooting procedures can identify certain problems that the diagnostic tests cannot.
2	Turn on the system and examine the power-up tests.	The power-up tests test each device in the system. When a device fails a power-up test, the system displays an error code that indicates the cause of the failure.
3	If the screen remains blank, examine the diagnostic LEDs.	The diagnostic LEDs provide clues to the state of the system when the screen fails to work.
4	If you see error codes in the power-up test display, write down the device name and error code associated with the device that failed, and run self-tests on those devices	The self-tests provide more information on the reason for the failure than the power-up tests do.
5	If you do not see error codes in the power-up test display, but know that the system is experiencing hardware problems, run the self-tests on all the devices in the system.	The self-tests sometimes detect problems that the power-up tests miss.
6	Use the SHOW DEVICE command to display the system device display. The problem might be associated with a system device.	The SHOW DEVICE display can identify problems in the system device configuration or with individual system devices.
7	Use the SHOW CONFIG command to display the EISA configuration. The problem might be associated with the EISA devices.	The SHOW CONFIG display provides more information on the EISA configuration.

Running Power-Up Tests

Summary

This section describes how to run and interpret the power-up tests.

Running Power-Up Tests

Power-up tests run when you turn on the system. The power-up test display varies depending on the default operating system setting. The power-up test display for Windows NT is different from the displays for the other operating systems.

Interpreting the Power-Up Test Displays

Table 7–2 shows how to interpret the power-up test displays.

Table 7–2 Interpreting the Power-Up Test Displays

Item	Description	Action
❶	Console code version.	Write down the console code version. Your Digital service representative may need this information.
❷	ROM version.	Write down the ROM version. Your Digital service representative may need this information.
❸	CPU type and version—The CPU type and version are displayed in the OpenVMS and OSF/1 console only.	Write down the CPU type and version. Your Digital service representative may need this information.
❹	Passing memory test—The memory test also displays the system memory configuration. Similarly, when the Ethernet test passes, it displays the Ethernet ID of the system.	
❺	Passing test—When a test passes, its status is listed as *OK* or passed, depending on the default operating system setting.	
❻	Failing test—When a test fails, its status is listed as double question marks (??) or *failed*, depending on the default operating system setting. Double question marks indicate an error in the OpenVMS and OSF/1 console. The system also displays the error code associated with the failure.	Write down the error code and device name of the failing test. Your Digital service representative may need this information.

Important Information

Note

The power-up self-tests do not test all types of option board. See the option board documentation for information on whether the system tests that particular option board.

OpenVMS and OSF/1 Display

Example 7–1 shows an OpenVMS and OSF/1 display.

Example 7–1 OpenVMS and OSF/1 Console Power-Up Test Display

```
This 1mb flash contains base level n.n DEC 2000 Model 300 AXP console code
                                    ❶
DEC 2000 Model 300 AXP - Rom Version nn ❷
Digital Equipment Corporation
System conducting power up tests
------------------------------------------------------------
Devnam            Devstat
--------          -------
     CPU          OK EV4 P2 6.6ns ❸
     MEM          OK 32MB ❹
     NVR          OK
     SCC          OK ❺
      IT          OK
     KBD          OK
     LPT          OK
      NI          ?? 2000 0182 ❻
    SCSI          OK
------------------------------------------------------------
```

Windows NT Display

Example 7–2 shows a Windows NT display.

Example 7–2 Windows NT Firmware Power-Up Test Display

```
         .
         .
         .
Testing KBD .... passed  ❺
Testing LPT .... passed
Testing VGA .... passed
Testing NI .... failed 2000 0182 ❻
Testing SCSI .... passed
------------------------------------------------------------
```

Running Self-Tests

Summary

This section describes how to run and interpret the self-tests.

Running Self-Tests

You can run self-tests on all the devices listed in the power-up test display, with the exception of CPU on the OpenVMS and OSF/1 console power-up test display. To run self-tests on a device, enter the command TEST followed by the device name. Example 7–3 shows how to run a self-test on the Ethernet (NI) device.

Successful Self-Test Display

When you run the self-test, the system tests the device. On certain devices, the system displays status messages from the subtests of the self-test that you are running. On all devices, the system displays the word *OK* before displaying the console prompt if the test succeeds (see Example 7–3).

Failing Self-Test Display

On certain devices, the system displays error status messages, followed by the error code line, and then the words *84 FAIL* before displaying the console prompt. On all devices, the system displays the error code line and the words *84 FAIL* before displaying the console prompt.

If the test fails, write down the device name (❶), the error status message (❷) and the error code line (❸) (see Example 7–4). Your Digital service representative may need this information.

Successful Self-Test

Example 7–3 shows an example of a successful Ethernet (NI) device self-test display.

Example 7–3 Successful Self-Test Display

```
>>> TEST NI
OK
>>>
```

Failing Self-Test

Example 7–4 shows an example of a failing Ethernet (NI) device self-test display.

Example 7–4 Failing Self-Test Display

```
>>> TEST NI  ❶
T_STS_NI - Test BUS
T_STS_NI - Test INIT
T_STS_NI - Test IRQ
T_ERR_NI - Interrupt test - interupt did not occurr.  ❷
       CSR0 = 1c1
?? 03    NI   150  ❸

  84 FAIL
>>>
```

Configuration Display

Summary

This section describes how to display and interpret the system configuration.

Displaying the System Configuration

You can display the system configuration by entering the SHOW CONFIG command.

Interpreting the Configuration Display

The configuration display shows a summary of the status of all the system devices in the order in which they were tested by the power-up tests. There are two ways to change the status of a device on the configuration display, as follows:

- By running a self-test on the device
- By turning off the system and then turning it on again

One of the most useful features of the configuration display is that it displays the EISA slot and device type of the devices that are located on EISA option boards. For example, the Ethernet (NI) device (❶) is an EISA option board in the first EISA connector (see Example 7–5). This feature allows you to check the system configuration after installing, moving, or removing an EISA option board.

EISA Device Error

If the configuration display shows an error code beside an EISA device, write down the EISA connector number and error codes associated with that device. Your Digital service representative may want this information.

If the configuration display shows error codes beside several EISA devices, the system module may be faulty. Write down the EISA connector numbers and error codes associated with all the failing devices.

Important Information

Note

The system configuration display does not include ISA devices. The system may also exclude certain EISA option boards from the display. See the EISA option board documentation for more information.

System Configuration Display

Example 7–5 shows a sample of a System Configuration display.

Example 7–5 Sample System Configuration Display

```
>>> SHOW CONFIG

DEC 2000 Model 300 AXP - Rom Version nnn
Digital Equipment Corporation
VMS PAL X5.41/OSF PAL X1.30 - Built on 19-MAY-1992 13:38:25.71

Eisa Info     Devnam            Devstat
---------     --------          -------
              CPU          OK EV4 P2
              MEM          OK 32MB
              NVR          OK
              SCC          OK
               IT          OK
              KBD          OK
              LPT          OK
1 DEC4220      NI          OK 09-01-2B-2F-3D-D4 ❶
2
3
4
5
6 ADP0002    SCSI          OK

>>>
```

System Device Display

Summary

This section describes how to display and interpret the system device display.

Displaying the System Device Display

You can display the system device display by entering the SHOW DEVICE command.

Interpreting the System Device Display

The system device display shows the Ethernet devices, the PC/AT-standard interface diskette drive, and the SCSI devices installed in the system. Perform the following actions, depending on the display:

- If the display does not contain an entry for all the Ethernet devices installed, along with their associated Ethernet addresses, make sure that the Ethernet option boards are correctly connected to the system unit, and that all the Ethernet ports or cables are properly terminated. See the Ethernet option board documentation for more information.
- If the display does not contain the diskette drive, check the diskette drive, the diskette drive power and signal cables, and the SCSI option board. See the SCSI option board documentation for more information.
- If the display does not contain an entry for all the SCSI devices installed, check the SCSI IDs of the devices, making sure that they are unique, check the devices, the device signal and power cables, and the SCSI option board. See the SCSI option board documentation for more information.

System Device Display

Example 7–6 shows a sample system device display.

Example 7–6 Updated System Display

```
>>> SHOW DEVICE

  BOOTDEV      ADDR      DEVTYPE    RM/FX    DEVNAM      REV     NUMBYTES
  -------      ----      -------    -----    ------      ---     --------
  ERA0         08-00-2B-2E-2E-C3
  DVA0         PC Floppy DISK       RM
  SCSI Devices..
  DKA0         A/0/0     DISK       FX       RZ25        0700    426.25MB
  MKA200       A/2/0     TAPE       RM       TZK10       03B8    ......
  DKA400       A/4/0     RODISK     RM       RRD42       4.5d    ......
  HOST         A/5/0     PROC                AHA1742A    G
```

Interpreting Diagnostic LEDs

Summary

This section describes how to interpret the diagnostic LED display.

Interpreting the Diagnostic LEDs Display

You can use the diagnostic LEDs to determine system problems when the system fails to display the power-up test display on the monitor or terminal. When you turn on the system, the system displays different combinations of the diagnostic LEDs as the system completes the power-up tests. If the power-up tests fail, the diagnostic LEDs display the combination that represents the failing test.

When reading the diagnostic LED combinations, read the LEDs from the top of the system unit. Most diagnostic LED combinations indicate serious problems with the system. However, Table 7–3 shows Diagnostic LED combinations that may indicate problems that you can correct without calling your Digital service representative. In Table 7–3, the number 0 indicates a LED that is off, and the number 1 indicates a LED that is on.

Table 7–3 LED Combinations Indicating Correctable Problems

Diagnostic LED Combination	Interpretation	Possible Problem and Solution
0111 or 0001	The system has successfully halted in the Windows NT firmware or the system has successfully halted at the OpenVMS console.	If the monitor or terminal has not displayed the power-up test display, check that the monitor or terminal power and signal cables are connected correctly and that the monitor or terminal is turned on and working. If the monitor or terminal is working correctly, contact your Digital service representative.

(continued on next page)

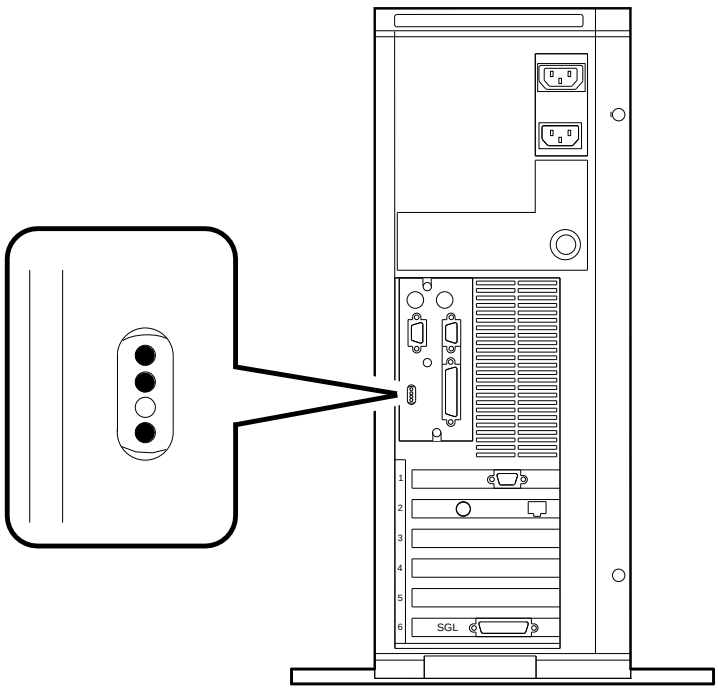
Table 7–3 (Cont.) LED Combinations Indicating Correctable Problems

Diagnostic LED Combination	Interpretation	Possible Problem and Solution
1001 or 1010	Memory error in memory bank 0 or memory bank 1.	If you have recently installed new memory modules or have changed the memory module configurations, ensure that the memory modules are properly installed in the memory module connectors. See Chapter 12 for information on properly configuring the memory modules. If the memory configuration is correct, contact your Digital service representative.

Diagnostic LEDs Location Illustration

Figure 7–1 shows the location of the diagnostic LED display. The figure shows the LED combination 1101.

Figure 7–1 Diagnostic LED Display Location



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8

Contacting Your Digital Service Representative

Introduction

This chapter describes the steps that you must perform before contacting your Digital service representative.

In This Chapter

This chapter contains the following sections:

- Reporting Problems to Your Digital Service Representative
- Problem Reporting Form

Reporting Problems to Your Digital Service Representative

Summary

This section describes how to report problems with your system to your Digital service representative. If you follow this procedure, your Digital service representative can determine the cause of the problem more easily.

Problem Reporting Procedure

Table 8–1 lists the steps that you must follow before contacting your Digital service representative.

Table 8–1 Problem Reporting Procedure

Step	Action
1	Make a copy of the problem reporting form (see the section entitled Problem Reporting Form in this chapter).
2	At the top of the form, underline the system name that appears on the front of the system.
3	Write the system model number and serial number on the form. The model number and serial number are located on a label on the rear of the system unit at the top.
4	Write down the name and version of the operating system installed on the system.
5	Write down the Ethernet type that your system is using, if your system is connected to a network.
6	Indicate the LEDs that are on in the circles on the form. Read the LEDs from top to bottom.
7	Follow the procedures listed in Chapter 6. List the actions that you take and the result of those actions in the space provided on the form.

(continued on next page)

Table 8–1 (Cont.) Problem Reporting Procedure

Step	Action
8	Follow the procedures listed in Chapter 7. List the commands that you enter and any error messages or omissions on the resulting displays, for example, an installed device that is not displayed on the system configuration display or SCSI device configuration display.
9	List the SCSI devices that are connected to or installed in the system beside their associated SCSI IDs.
10	List the EISA or ISA devices connected to the system beside their associated connector slot numbers.
11	When you have all the information you need, call your service representative. You must be beside the system when you call, so that you can enter diagnostic commands, see the resulting displays, and read the diagnostic LED display when asked.

Problem Reporting Form

Summary

This section provides a problem reporting form. Use the problem reporting form to gather the information that you need before contacting your Digital Service representative.

Using the Problem Reporting Form

Before you contact your Digital service representative, complete the procedure listed in Table 8–1. To preserve the form for future calls, either copy the form, or write the information requested on a separate piece of paper. Have the information available to you when you make the call.

DECpc AXP 150 and DEC 2000 Model 300 AXP

Problem Reporting Form

System Model Number:
System Serial Number:
Operating System Installed:

Diagnostics LED Display:

1 ○
2 ○
3 ○
4 ○

Troubleshooting Notes:

Diagnostic Procedure Notes:

Power-Up Tests:

Device	Error Code

Self-Tests:

Device	Error Code

EISA Configuration	SCSI Configuration
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.

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9

Removing and Installing the System Unit Covers and Feet

Introduction

This chapter describes how to open and close the system unit. It describes how to remove the system covers and then how to reassemble the system. It also describes how to remove and install the system unit feet.

In This Chapter

This chapter contains the following sections:

- Removing the Outside Cover
- Removing the Inside Covers
- Removing the System Unit Feet
- Installing the System Unit Feet
- Reassembling the System Unit

Removing the Outside Cover

Summary

To access the internal components, you must remove the outside cover from the system unit. This section describes how to complete this task.

Preparing to Remove the Outside Cover

Table 9–1 lists the steps that you must follow before removing the outside cover.

Table 9–1 Preparing to Remove the Outside Cover

Step	Action
1	Shut down the operating system following the instructions listed in the operating system documentation.
2	Set the on/off switches on all peripherals connected to the system to the off position.
3	Set the on/off switch on the system unit to the off position.

Important Information

Caution

Make sure that the system unit on/off switch is in the off position before removing the outside cover.

Outside Cover Removal Procedure

Table 9–2 lists the steps that you must follow to remove the outside cover.

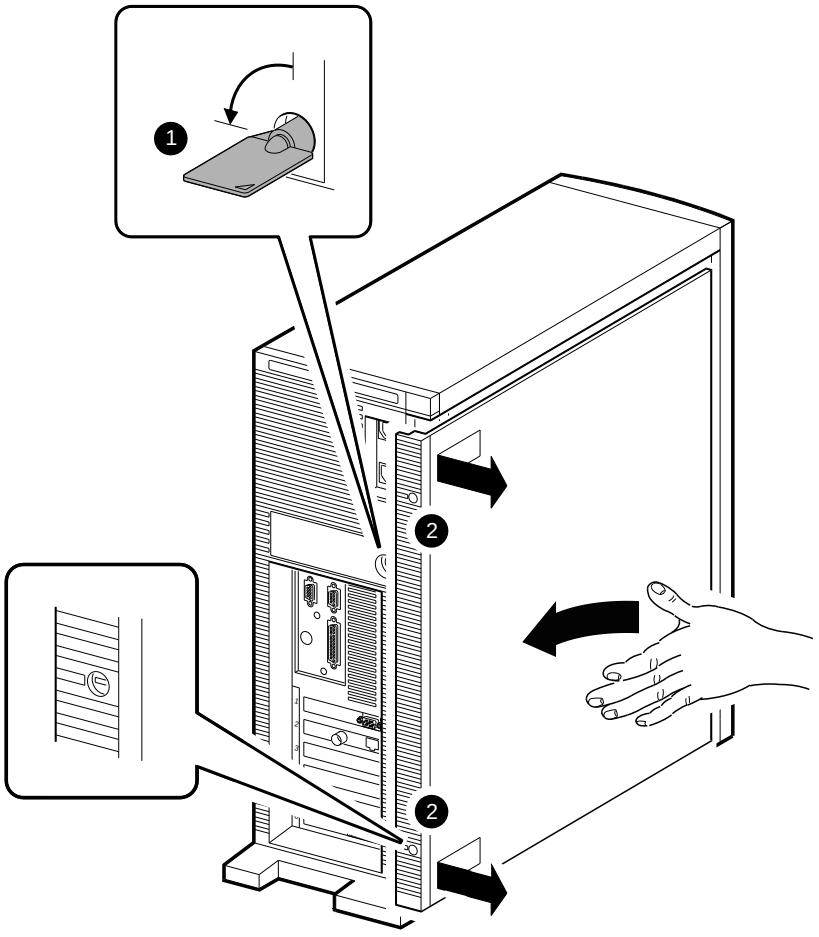
Table 9–2 Removing the Outside Cover

Step	Action
1	Unlock the outside cover using the chassis key (❶).
2	Loosen the two captive screws (❷).
3	Slide the outside cover towards the rear of the system unit and remove it.

Illustrated Outside Cover Removal Procedure

Figure 9–1 shows how to remove the outside cover from the system unit.

Figure 9–1 Removing the Outside Cover



Removing the Inside Covers

Summary

To access the internal components, you must remove both inside covers from the system unit. This section describes how to complete this task.

Inside Covers Removal Procedure

Table 9–3 lists the steps that you must follow to remove both inside covers.

Note

The peripheral bay cover (❶) may not be installed in the system. It is installed only in older systems.

Table 9–3 Removing the Inside Covers

Step	Action
1	Remove the inside peripheral bay cover by inserting your finger into the circular hole (❷) and lifting the cover out.
2	Remove the two screws (❸) securing the large inside cover to the chassis. Keep the screws in a safe place.
3	Insert your finger into the circular holes (❹) on the large inside cover, then slide it towards the front of the system unit and remove it.

Important Information

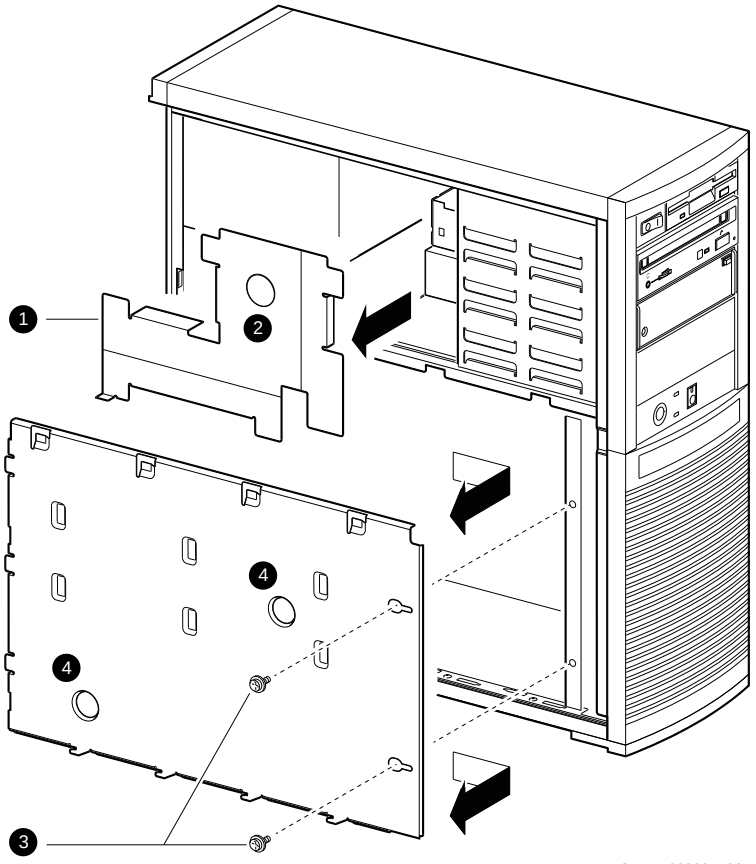
Caution

Static electricity can damage electronic components. Use an antistatic wrist strap while handling the components installed under these covers (see Appendix B).

Illustrated Inside Covers Removal Procedure

Figure 9–2 shows how to remove both inside covers from the system unit.

Figure 9–2 Removing the Inside Covers



Removing the System Unit Feet

Summary

This section describes how to remove the system unit feet. You can complete many of the procedures described in the following chapters more easily with the system unit lying flat on a work surface.

Important Information

Caution

To avoid damaging the system unit feet, lay the system unit on its side, with the base extending over the edge of the work surface.

System Unit Feet Removal Procedure

Table 9–4 lists the steps that you must follow to remove the system unit feet

Table 9–4 Removing the System Unit Feet

Step	Action
1	Lay the system unit on its side, with the base extending over the edge of the work surface.
2	Remove the outside and inside covers from the system unit.
3	If necessary, remove any option boards that are close to the base of the system unit. See Chapter 10 for information on removing the option boards.
4	To remove the rear foot, press the base of the system module hard with your thumb at the point (❶) indicated by the arrow in view A, while alternately tapping each side of the foot in the direction of the arrows until you free the locking tabs.
5	Remove the rear foot from the slots on the base of the system module.

(continued on next page)

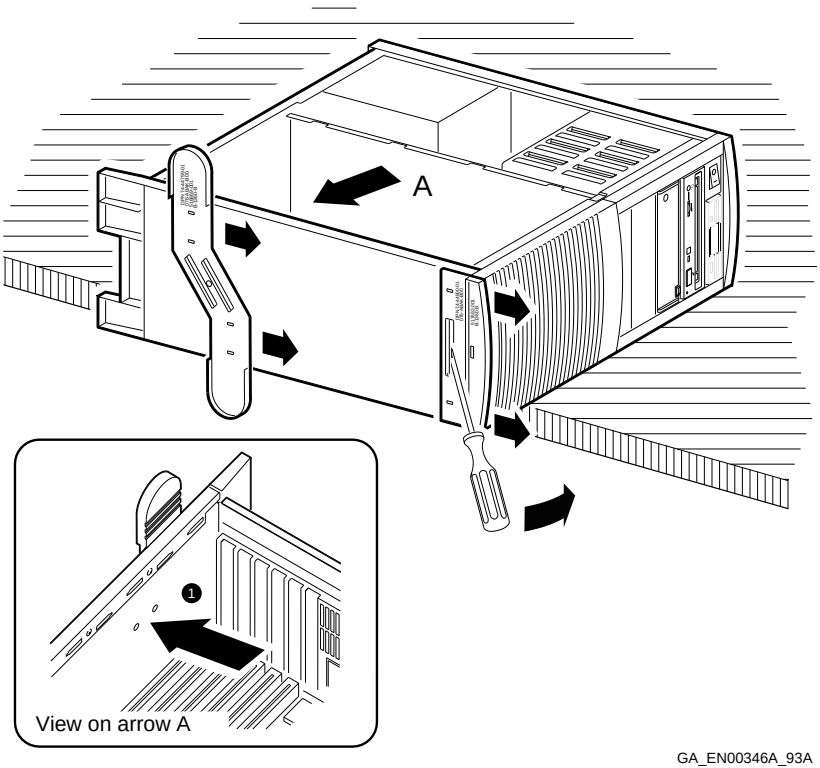
Table 9–4 (Cont.) Removing the System Unit Feet

Step	Action
6	To remove the front foot, use a screw driver to prize the locking tab clear of the base of the system module, then slide it forward.
7	Remove the front foot from the slots on the base of the system module.

Illustrated Feet Removal Procedure

Figure 9–3 shows how to remove both system unit feet.

Figure 9–3 Removing the System Unit Feet



Installing the System Unit Feet

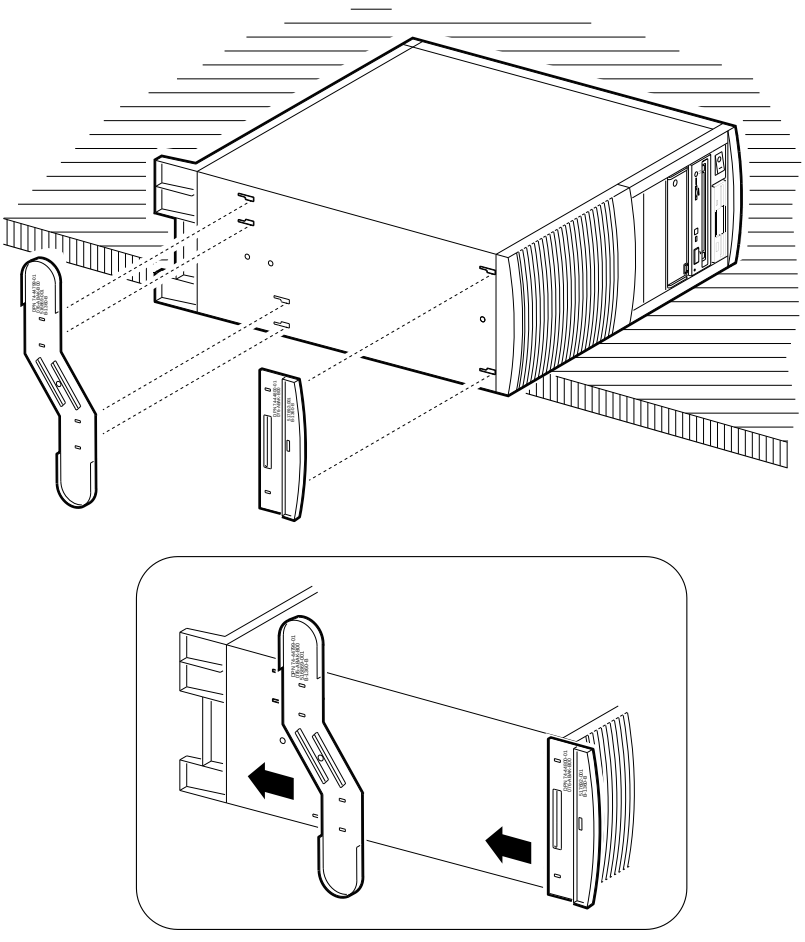
Summary

This section describes how to install the system unit feet.

Installing the System Unit Feet

Figure 9–4 shows how to install the system unit feet.

Figure 9–4 Installing the System Unit Feet



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Reassembling the System Unit

Summary

This section describes how to reassemble the system unit. Reassembling the system unit involves reversing the steps used to disassemble it.

System Unit Reassembly Procedure

Table 9–5 lists the steps that you must follow to reassemble the system unit.

Table 9–5 Reassembling the System Unit

Step	Action
1	If necessary, install the system unit feet.
2	If necessary, replace the option boards that you removed to remove the system unit feet.
3	Reconnect any internal cables that you disconnected from an option board.
4	Install the large inner cover and secure it to the chassis by tightening the securing screws.
5	If necessary, install the inside peripheral bay cover.
6	Install the outside cover and secure it to the chassis using the captive screws.
7	Lock the outside cover using the chassis key.
8	Install the system unit feet.
9	Reconnect any external cables that you disconnected from the system unit.
10	Set the on/off switches on all peripherals connected to the system to the on position.
11	Set the on/off switch on the system unit to the on position.

10

Installing, Moving, or Removing Option Boards

Introduction

This chapter describes how to install, move, or remove EISA or ISA option boards.

In This Chapter

This chapter contains the following sections:

- Before You Begin
- Disconnecting the SCSI Option Board Ribbon Cables
- Removing an Option Board
- Installing an Option Board
- Testing an EISA Option Board Installation
- Reconfiguring the Option Boards

Before You Begin

Summary

This section describes the order in which you must follow the procedures listed in this chapter. It also describes the equipment that you need to complete the procedures listed.

Equipment Requirements

You need the following equipment to install, move, or remove an option board:

- Flat-head screw driver
- Philips-head screw driver
- Antistatic wrist strap
- Option board kit or option board packaging material, depending on whether you are installing or removing the option board.

Important Information

Note

You must remove the system unit covers to complete most of the procedures listed in this chapter. See Chapter 9 for information on removing the system unit covers.

Tasks and Related Sections

Table 10–1 lists the tasks described in this chapter and the section titles that you must read in the order listed to complete the task.

Table 10–1 Tasks and Related Sections

Task	Page	Section Title
Removing an option board	10-2	Before You Begin
	10-4	Disconnecting the SCSI Option Board Ribbon Cables
	10-6	Removing an Option Board
	10-12	Reconfiguring the Option Boards
Installing an option board	10-2	Before You Begin
	10-4	Disconnecting the SCSI Option Board Ribbon Cables
	10-8	Installing an Option Board
	10-10	Testing an EISA Option Board Installation
	10-12	Reconfiguring the Option Boards
Moving an option board	10-2	Before You Begin
	10-4	Disconnecting the SCSI Option Board Ribbon Cables
	10-6	Removing an Option Board
	10-8	Installing an Option Board
	10-10	Testing an EISA Option Board Installation
	10-12	Reconfiguring the Option Boards

Disconnecting the SCSI Option Board Ribbon Cables

Summary

To access some of the components beneath the large inside cover, you must disconnect the SCSI option board ribbon cables. This section describes how to complete this task.

Important Information

Caution

Static electricity can damage electronic components. Use an antistatic wrist strap while handling these components (see Appendix B).

Disconnection Procedure

Table 10–2 lists the steps that you must follow to disconnect both SCSI option board ribbon cables.

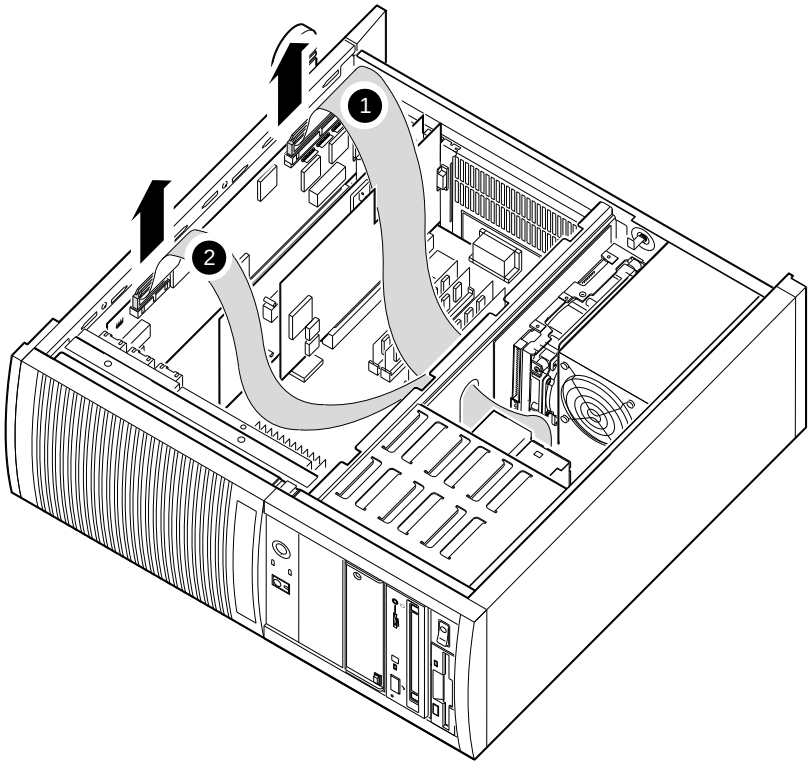
Table 10–2 Disconnecting the SCSI Option Board Ribbon Cables

Step	Action
1	If necessary, remove the system unit covers following the procedure described in Chapter 9.
2	Disconnect the larger ribbon cable (❶) and place it out of your way.
3	Disconnect the smaller ribbon cable (❷) and place it out of your way.

Illustrated Disconnection Procedure

Figure 10–1 shows how to disconnect both SCSI option board ribbon cables.

Figure 10–1 Disconnecting the SCSI Option Board Ribbon Cables



Removing an Option Board

Summary

This section describes how to remove an ISA or EISA option board from the system unit.

Important Information

Caution

Static electricity can damage electronic components. Use an antistatic wrist strap while handling these components (see Appendix B).

Option Board Removal Procedure

Table 10–3 lists the steps that you must follow to remove an option board.

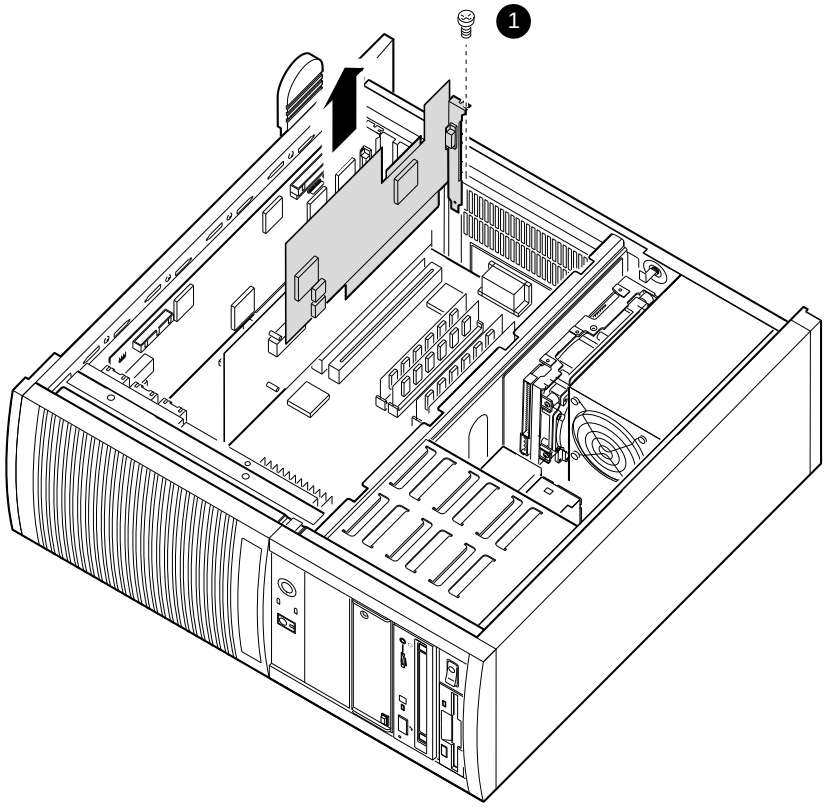
Table 10–3 Removing an Option Board

Step	Action
1	Disconnect any cables connected to the external or internal ports on the option board.
2	Remove the screw (❶) securing the option board to the chassis.
3	Carefully disconnect the option board from the connectors on the system module and remove it from the system.
4	If you intend leaving the option slot vacant, install a slot cover and secure it to the chassis using the screw (❶) that you removed.
5	If you have finished removing or installing internal options, reassemble the system following the procedure described in Chapter 9.

Illustrated Option Board Removal Procedure

Figure 10–2 shows how to remove an option board.

Figure 10–2 Removing an Option Board



Installing an Option Board

Summary

This section describes how to install an ISA or EISA option board in the system unit.

Important Information

Caution

Static electricity can damage electronic components. Use an antistatic wrist strap while handling these components (see Appendix B).

Option Board Installation Procedure

Table 10–4 lists the steps that you must follow to install an option board.

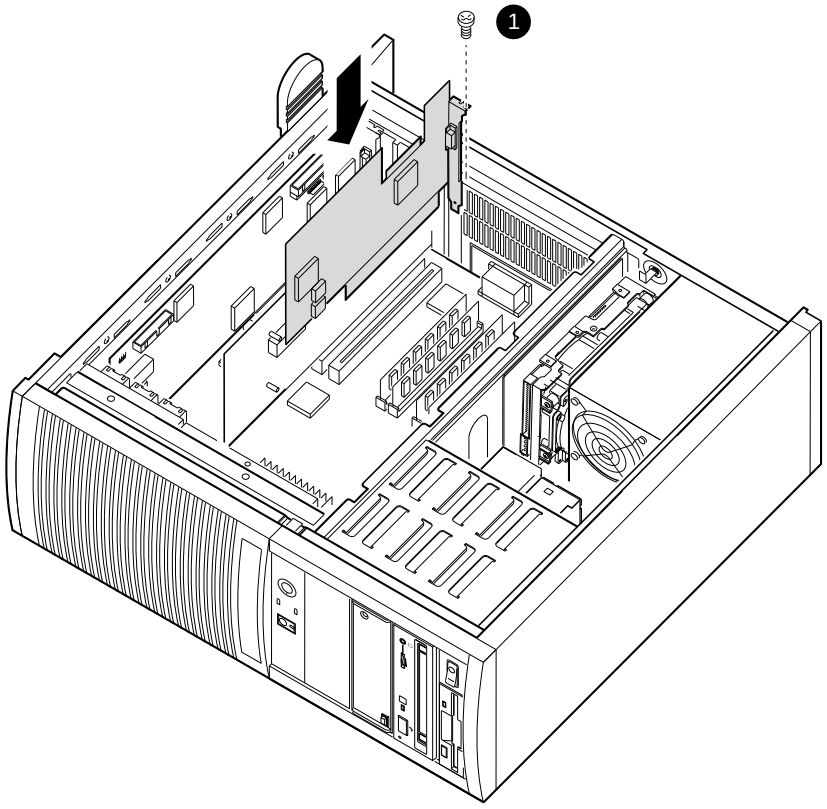
Table 10–4 Installing an Option Board

Step	Action
1	Select a vacant option board slot on the system unit.
2	Remove the screw (❶) securing the slot cover to the chassis.
3	Remove the slot cover from the system unit and store it for future use.
4	Carefully install the option board into the appropriate connectors on the system module and press it firmly into place.
5	Secure the option board to the chassis using the screw (❶) you removed.
6	If you have finished removing or installing internal options, reassemble the system following the procedure described in Chapter 9.

Illustrated Option Board Installation Procedure

Figure 10–3 shows how to install an option board.

Figure 10–3 Installing an Option Board



Testing an EISA Option Board Installation

Summary

This section describes how to test an EISA option board installation.

Important Information

Caution

Reassemble the system following the procedures listed in Chapter 9 before you turn on the system unit.

Testing an EISA Option Board Installation

Table 10–5 lists the steps that you must follow to test an EISA option board installation.

Table 10–5 Testing EISA Options Using the SHOW CONFIG Display

Step	Action	Result
1	Enter the SHOW CONFIG command (❶) to display the system configuration.	The system responds with a display similar to Example 10–1.
2	Examine the EISA Info column (❷) to make sure that the new EISA option (❹) is listed.	If the EISA option is not listed, see Chapter 6.
3	Examine the Devnam column (❸) to determine the device name of the new EISA option.	You must know the device name to run self-tests on the EISA option.
4	Run a self-test on the EISA option by entering the TEST command followed by the device name of the option (❺).	If the self-test passes, the system displays the word OK (❻) before displaying the console prompt (>>>). If the system displays a failure message, for example, *84 FAIL*, see Chapter 6.

System Configuration and Self-Test Display

Example 10–1 shows a sample of a system configuration display followed by a self-test display.

Example 10–1 System Configuration and Self-Test Display

```
>>> SHOW CONFIG ❶

DEC 2000 Model 300 AXP - Rom Version nnn
Digital Equipment Corporation
VMS PAL X5.41/OSF PAL X1.30 - Built on 19-MAY-1992 13:38:25.71
   ❷          ❸
Eisa Info     Devnam            Devstat
---------     --------          -------
              CPU          OK EV4 P2
              MEM          OK 32MB
              NVR          OK
              SCC          OK
               IT          OK
              KBD          OK
              LPT          OK
1 DEC4220      NI          OK 09-01-2B-2F-3D-D4 ❹
2
3
4
5
6 ADP0002    SCSI          OK

>>>
>>> TEST NI ❺
T-STS-NI - Test BUS
T-STS-NI - Test INIT
T-STS-NI - Test IRQ
T-STS-NI - Test NAR
T-STS-NI - Test ILB
T-STS-NI - Test CRC
T-STS-NI - Test RXB
T-STS-NI - Test ADF
T-STS-NI - Test COLL

OK  ❻
>>>
```

Reconfiguring the Option Boards

Summary

This section describes how to reconfigure the EISA option boards.

Option Boards Reconfiguration Procedure

After you turn on the system, the system power-up sequence examines the EISA option slots and determines whether you have changed the EISA configuration. If you have changed the EISA configuration, the system displays a message indicating that a new configuration is required.

You must access the Windows NT firmware and run the EISA configuration utility to reconfigure the option boards. See Chapter 4 for information on reconfiguring the option boards.

11

Installing or Removing Internal Storage Devices

Introduction

This chapter describes how to install an internal storage device in or remove it from the system unit.

In This Chapter

This chapter contains the following sections:

- Before You Begin
- Determining the Available SCSI IDs
- Removing the Front Peripheral Bay Bezel
- Identifying the Drive Bays
- Removing a SCSI Drive from a Front Drive Bay
- Removing a 3.5-Inch Diskette Drive from the Front Drive Bay
- Replacing a 3.5-Inch Diskette Drive
- Attaching Slide Rails to the Front Drive Bay Devices
- SCSI Cable Routing Information
- Installing or Replacing a Drive in a Front Drive Bay
- Replacing the Front Peripheral Bay Bezel
- Removing a Disk Drive from the Rear Drive Bay
- Installing or Replacing a Disk Drive in the Rear Drive Bay
- Testing the System Device Configuration

Before You Begin

Summary

This section describes the order in which you must follow the procedures listed in this chapter. It also describes the equipment that you need to complete the procedures listed.

Equipment Requirements

You need the following equipment to install, move, or remove an option board:

- Flat-head screw driver
- Philips-head screw driver
- Antistatic wrist strap
- Storage device kit or packaging material, depending on whether you are installing or removing the storage device

Tasks and Related Sections

Table 11–1 lists the tasks described in this chapter and the section titles that you must read in the order listed to complete the task.

Table 11–1 Tasks and Related Sections

Task	Page	Section Title
Removing a SCSI device from a front drive bay	11-2	Before You Begin
	11-6	Removing the Front Peripheral Bay Bezel
	11-10	Removing a SCSI Drive from a Front Drive Bay
	11-22	Replacing the Front Peripheral Bay Bezel
	11-28	Testing the System Device Configuration

(continued on next page)

Table 11–1 (Cont.) Tasks and Related Sections

Task	Page	Section Title
Installing or replacing a SCSI device in a front drive bay	11-2	Before You Begin
	11-4	Determining the Available SCSI IDs
	11-6	Removing the Front Peripheral Bay Bezel
	11-8	Identifying the Drive Bays
	11-16	Attaching Slide Rails to the Front Drive Bay Devices
	11-18	SCSI Cable Routing Information
	11-20	Installing or Replacing a Drive in a Front Drive Bay
	11-22	Replacing the Front Peripheral Bay Bezel
	11-28	Testing the System Device Configuration
Removing, installing, or replacing a SCSI device in the rear drive bay	11-2	Before You Begin
	11-4	Determining the Available SCSI IDs
	11-8	Identifying the Drive Bays
	11-18	SCSI Cable Routing Information
	11-24	Removing a Disk Drive from the Rear Drive Bay
	11-26	Installing or Replacing a Disk Drive in the Rear Drive Bay
	11-28	Testing the System Device Configuration
Removing and replacing the PC/AT-standard interface diskette drive	11-2	Before You Begin
	11-6	Removing the Front Peripheral Bay Bezel
	11-12	Removing a 3.5-Inch Diskette Drive from the Front Drive Bay
	11-14	Replacing a 3.5-Inch Diskette Drive
	11-22	Replacing the Front Peripheral Bay Bezel
	11-28	Testing the System Device Configuration

Determining the Available SCSI IDs

Summary

This section describes how to identify the available SCSI IDs by checking the system configuration. You must have this information if you want to install a new SCSI drive within the system.

Determining the Available SCSI IDs

Table 11–2 lists the steps that you must follow to determine the available SCSI IDs.

Table 11–2 Determining the Available SCSI IDs from the SHOW DEVICE Display

Step	Action	Result
1	Enter the SHOW DEVICE command (❶) to display the SCSI configuration.	The system responds with a display similar to Example 11–1.
2	Examine the ADDR column (❷) in the display.	The ADDR column lists the SCSI address of each device connected to the SCSI bus. The first number (❸) in the SCSI address is the SCSI ID. It must be a unique number in the range 0 to 7. Any unused SCSI IDs in this range are available for use by the devices that you want to connect to the system.
3	Write down the list of unused SCSI IDs.	

SHOW DEVICE Display

Example 11–1 shows a sample SHOW DEVICE display.

Example 11–1 SHOW DEVICE Display

```
>>> SHOW DEVICE ❶

                ❷
BOOTDEV       ADDR       DEVTYPE    RM/FX    DEVNAM       REV     NUMBYTES
-------       ----       -------    -----    ------       ---     --------
ERA0          08-00-2B-2E-2E-C3
DVA0          PC Floppy DISK       RM
SCSI Devices..
DKA0          A/0/0      DISK       FX       RZ25         0700    426.25MB
MKA200        A/2/0      TAPE       RM       TZK10        03B8    ......
DKA400        A/4/0      RODISK     RM       RRD42        4.5d    ......
HOST          A/5/0      PROC                AHA1742A     G
                ❸
```

Removing the Front Peripheral Bay Bezel

Summary

This section describes how to remove the front peripheral bay bezel. You must remove this bezel before you can remove either the RX26 3.5-inch diskette drive or any removable media devices or disk drives in the front 5.25-inch drive bays.

Important Information

Note

You must remove the system unit covers to complete most of the following procedures. See Chapter 9 for information on removing the system unit covers.

Front Peripheral Bay Bezel Removal

Table 11–3 lists the steps that you must follow to remove the front peripheral bay bezel.

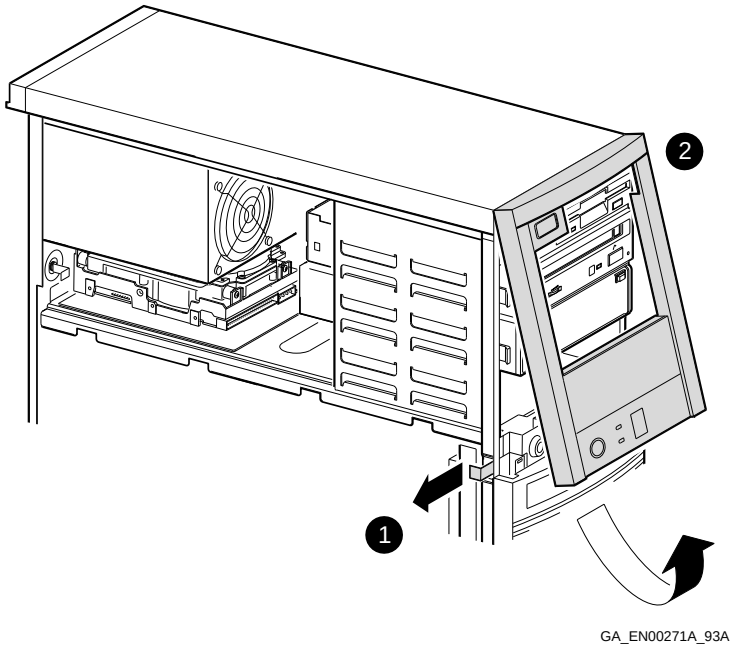
Table 11–3 Removing the Front Peripheral Bay Bezel

Step	Action
1	Remove the system unit covers following the procedure in Chapter 9.
2	Pull the bezel locking-latch (❶) out until it stops.
3	Lift the front peripheral bay bezel from the bottom and then lift it out and off its hinges (❷).

Illustrated Bezel Removal Procedure

Figure 11–1 shows how to remove the front peripheral bay bezel.

Figure 11–1 Removing the Front Peripheral Bay Bezel



Identifying the Drive Bays

Summary

This section describes how to identify the drive bays inside the system unit. After you identify the drive bays, you can determine which drive bays are vacant.

Identifying Drive Bays

Table 11–4 lists the drive bays inside the system unit.

Table 11–4 Internal Drive Bays

Item	Description
❶	Front diskette drive bay—Accepts 3.5-inch diskette drives
❷	Front 5.25-inch drive bays—Accept 5.25-inch removable media devices or 3.5-inch disk drive devices
❸	Rear disk drive bay—Accepts 3.5-inch disk drives

SCSI Drive Positioning Guidelines

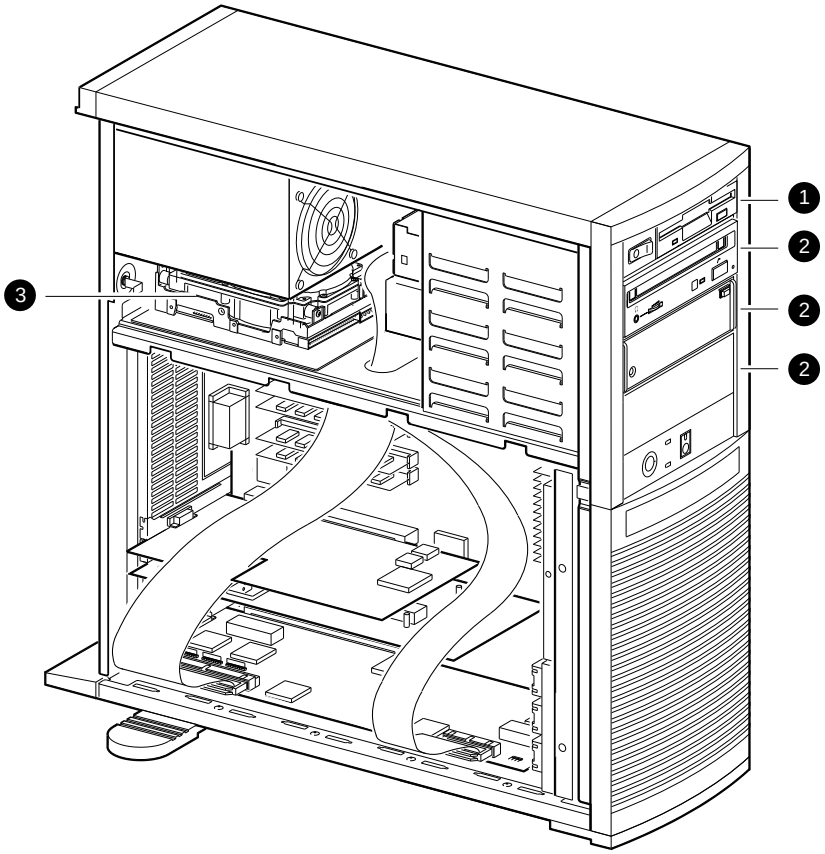
Follow these guidelines when positioning SCSI drives in the drive bays:

- Install an optional tape drive or CD-ROM drive in the bays that are immediately below the diskette drive.
- Install other SCSI half-height (HH) devices in any of the remaining bays.

Drive Bay Illustration

Figure 11–2 shows the drive bays inside the system unit.

Figure 11–2 System Drive Bays



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Removing a SCSI Drive from a Front Drive Bay

Summary

This section describes how to remove a SCSI drive from a front drive bay.

SCSI Drive Removal Procedure

Table 11–5 lists the steps that you must follow to remove a SCSI drive from a front drive bay.

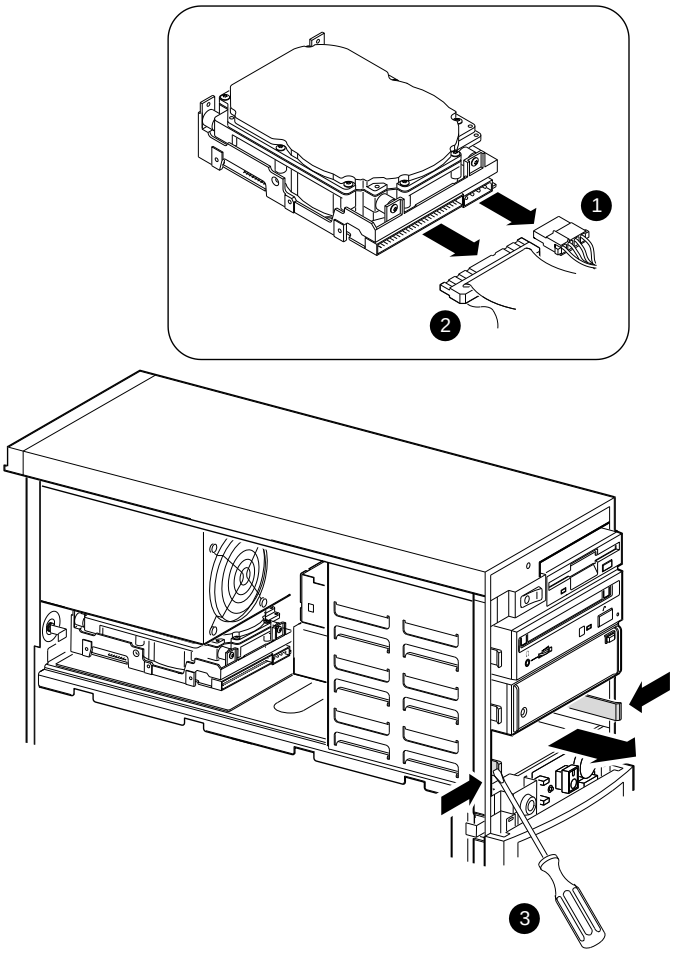
Table 11–5 Removing a SCSI Drive

Step	Action
1	Disconnect the power cable (❶) and the data cable (❷) from the back of the drive.
2	Use a flat-head screwdriver (❸) to free the locking clips from the slots on the side of the drive bay.
3	Slide the drive forward and remove it from the drive bay.
4	Unscrew the extension brackets (3.5-inch drives only), slide rails, and grounding clips from the drive.

SCSI Drive Removal Illustration

Figure 11–3 shows how to remove a SCSI drive from a front drive bay.

Figure 11–3 Removing a SCSI Drive from a Front Drive Bay



Removing a 3.5-Inch Diskette Drive from the Front Drive Bay

Summary

This section describes how to remove a 3.5-inch diskette drive from the front drive bay.

3.5-Inch Diskette Drive Removal Procedure

Table 11–6 lists the steps that you must follow to remove a 3.5-inch diskette drive from the front drive bay.

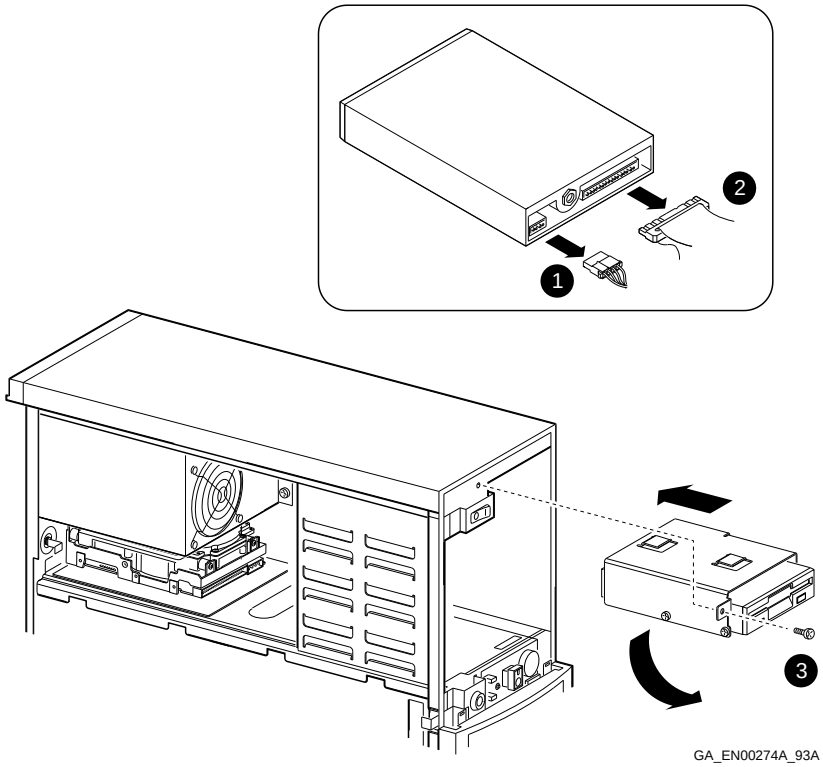
Table 11–6 Removing a 3.5-Inch Diskette Drive

Step	Action
1	Remove the drive that is just below the 3.5-inch diskette drive.
2	Disconnect the power cable (❶) and data cable (❷) from the back of the drive.
3	Remove the retaining screw (❸) that secures the 3.5-inch diskette drive mounting bracket to the chassis.
4	Slide the mounting bracket and drive to the back of the system unit to free the mounting bracket clips from their slots, then remove it from the system unit.
5	Remove the 3.5-inch diskette drive from the mounting bracket.

3.5-Inch Diskette Drive Removal Illustration

Figure 11–4 shows how to remove a 3.5-inch diskette drive from the front drive bay.

Figure 11–4 Removing a 3.5-Inch Diskette Drive from the Front Drive Bay



Replacing a 3.5-Inch Diskette Drive

Summary

This section describes how to replace a 3.5-inch diskette drive in the front drive bay.

3.5-Inch Diskette Drive Replacement Procedure

Table 11–7 lists the steps that you must follow to replace a 3.5-inch diskette drive in the front drive bay.

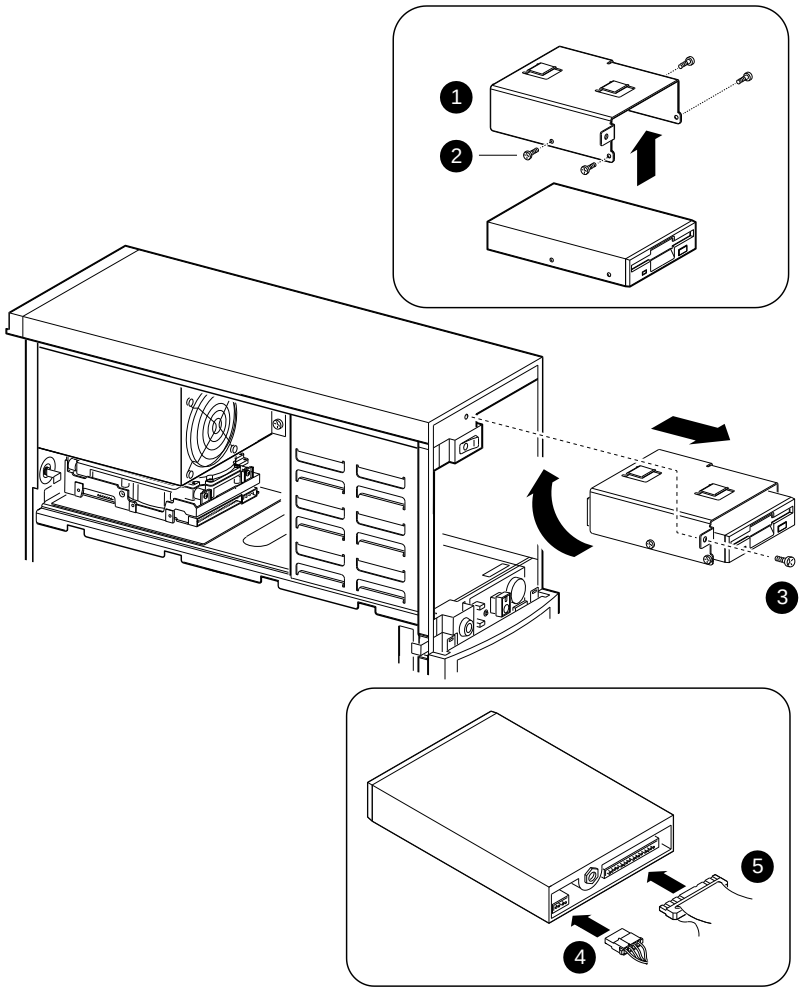
Table 11–7 Replacing a 3.5-Inch Diskette Drive

Step	Action
1	Remove the drive that is just below the 3.5-inch diskette drive.
2	Remove the original 3.5-inch diskette drive.
3	Set the ID select switch on the replacement diskette drive to the same position as the ID select switch on the original diskette drive.
4	Attach the mounting bracket (❶) to the replacement 3.5-inch diskette drive using the four screws (❷) that you removed from the original diskette drive.
5	Insert the mounting bracket and diskette assembly into the system unit, and pull it forward to secure the three mounting bracket clips in the appropriate slots on the chassis.
6	Secure the assembly to the system unit box using the retaining screw (❸).
7	Connect the power cable (❹) and the data cable (❺) to the diskette drive.
8	If necessary, replace the drive you removed from below the diskette drive.

3.5-Inch Diskette Drive Replacement Illustration

Figure 11–5 shows how to replace a 3.5-inch diskette drive in the front drive bay.

Figure 11–5 Replacing a 3.5-Inch Diskette Drive in the Front Drive Bay



Attaching Slide Rails to the Front Drive Bay Devices

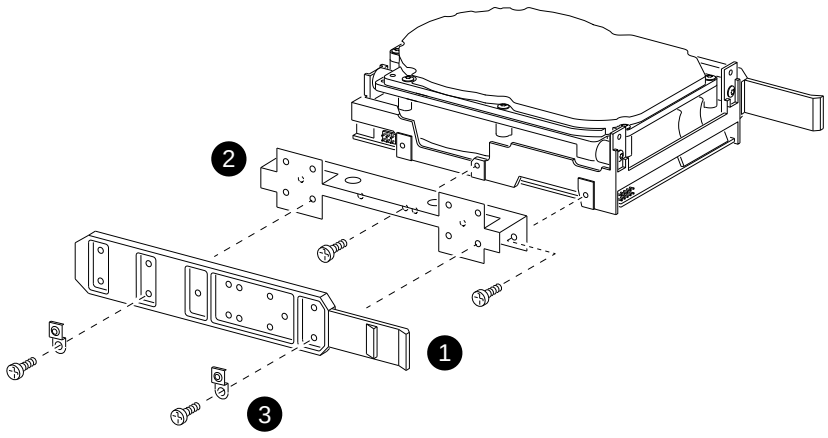
Summary

This section describes how to attach slide rails to the SCSI drives that you intend installing in the front drive bay.

3.5-Inch Drive Slide Rails

Figure 11–6 shows how to attach slide rails (❶), extension brackets (❷), and grounding clips (❸) to a 3.5-inch drive, for example, an RZ™25 3.5-inch disk drive.

Figure 11–6 Attaching Slide Rails to 3.5-Inch Drives



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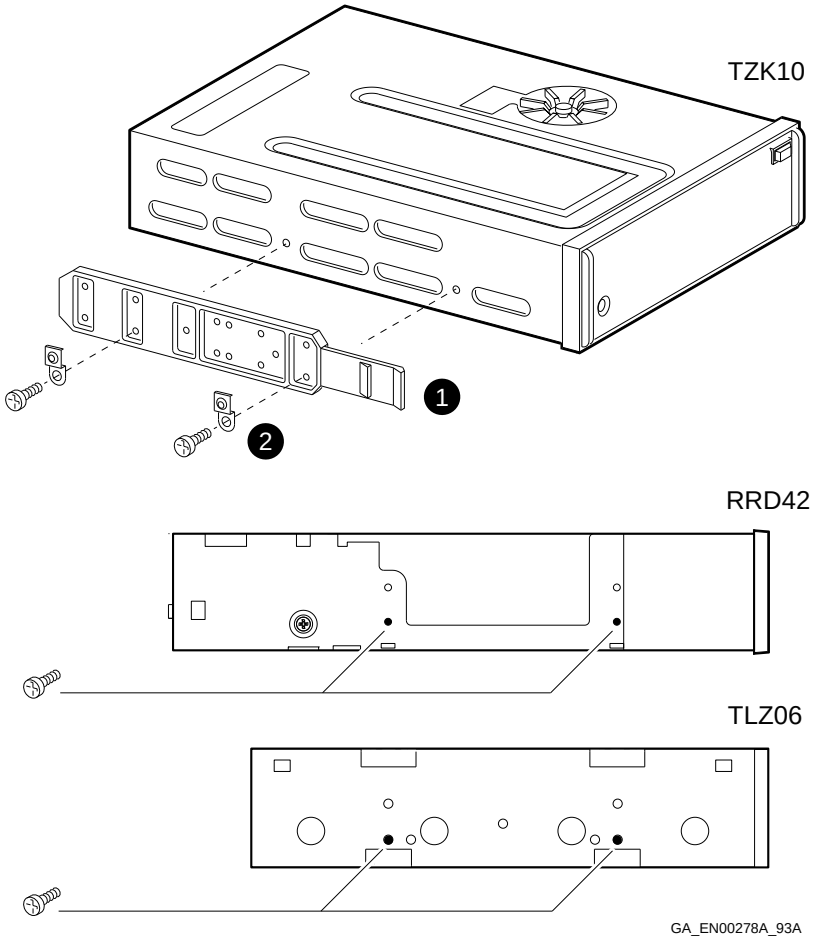
5.25-Inch Drive Slide Rails

Figure 11–7 shows how to attach slide rails (❶) and grounding clips (❷) to the 5.25-inch drives, for example, the TZK10 tape drive, the TLZ06 tape drive, and the RRD42 CD-ROM drive.

Figure 11–7 Attaching Slide Rails to 5.25-Inch Drives



SCSI Cable Routing Information

Summary

This section describes how the SCSI cable connects to the SCSI devices installed in the system unit.

Important Information

Caution

Make sure that you do not damage the SCSI cable when folding it.

SCSI Cable Routing

Table 11–8 describes how the SCSI cable connects to SCSI devices in each of the SCSI drive bays.

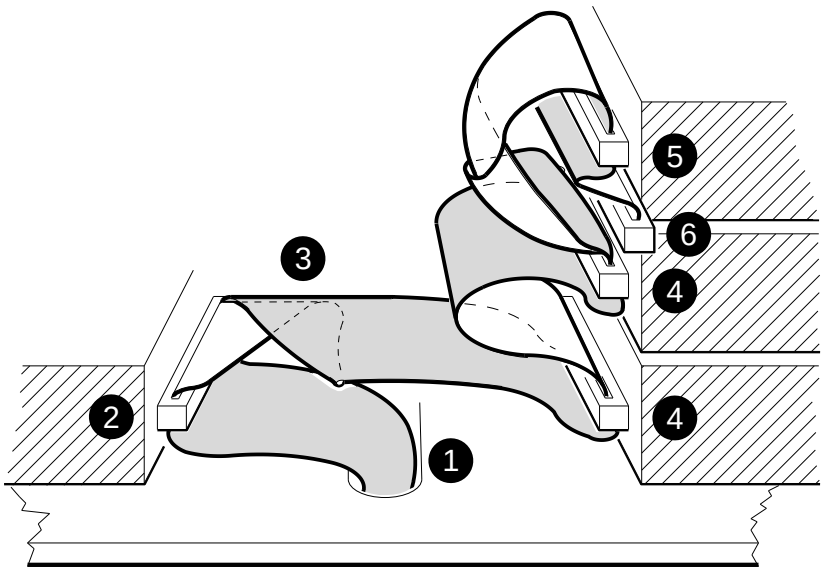
Table 11–8 SCSI Cable Routing

Item	Description
❶	The oval slot in the chassis panel permits the SCSI cable to run between the SCSI option board and the SCSI devices.
❷	The SCSI cable connects directly to the disk drive in the rear drive bay with the key on the SCSI connector pointing upwards.
❸	The cable must fold as shown to connect to a disk or tape drive in the lowest front drive bay.
❹	The SCSI cable connects to the devices in the lower two front drive bays with the key on the SCSI connector pointing upwards.
❺	The SCSI cable connector on an RRD42 CD-ROM drive is inverted when compared to other SCSI drives. If it is installed, the SCSI cable connects to it with the key on the SCSI connector pointing downwards. The SCSI cable must twist through 180° as shown.
❻	The SCSI cable must be terminated. The terminator connects to the last SCSI connector on the cable.

SCSI Cable Routing Illustration

Figure 11–8 shows how the SCSI cable connects to the SCSI devices that are installed in each of the SCSI drive bays.

Figure 11–8 SCSI Cable Routing



Installing or Replacing a Drive in a Front Drive Bay

Summary

This section describes how to install or replace a SCSI drive in a front drive bay.

Installation or Replacement Procedure

Table 11–9 lists the steps that you must follow to install or replace a SCSI drive in a front drive bay.

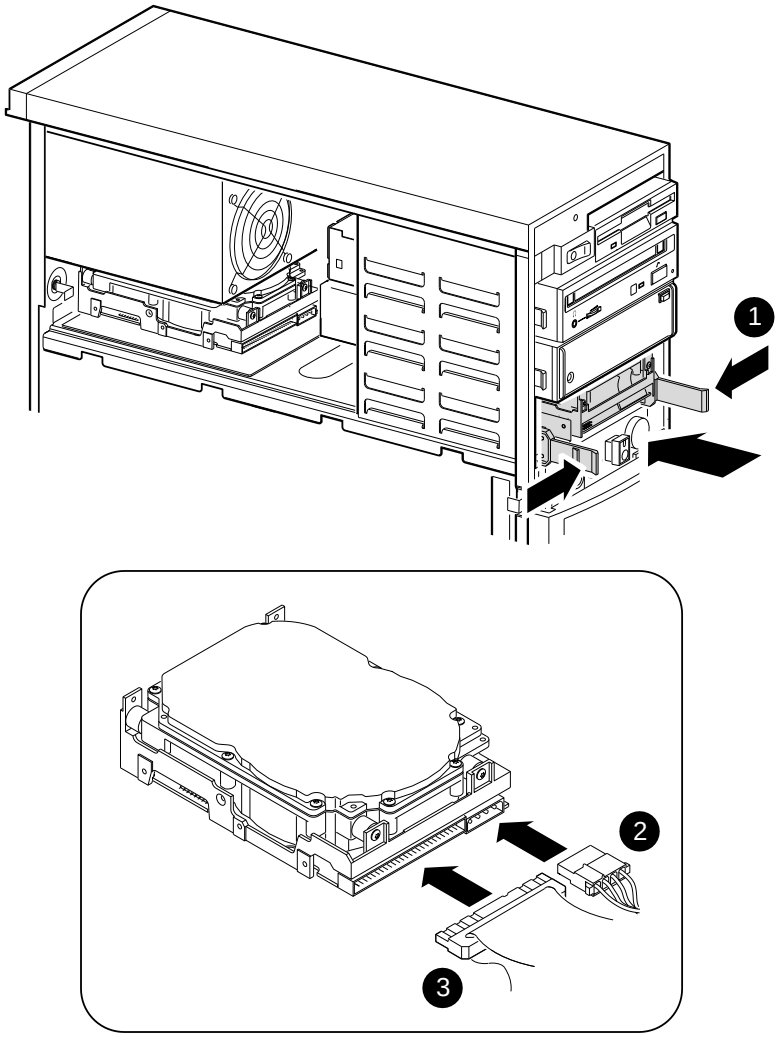
Table 11–9 Installing or Replacing a SCSI Drive in the Front Drive Bay

Step	Action
1	If necessary, see the section entitled Before You Begin for information on the sections that you must read before continuing with this procedure.
2	If you have not done so already, remove the original drive that you want to replace.
3	If you are replacing a drive, set the SCSI ID on the replacement drive to the same ID as the original drive. If you are installing a drive, set the SCSI ID on the new drive to an available ID. See Appendix A or the documentation supplied with the drive for information on setting the SCSI IDs.
4	If you have not done so already, attach the grounding clips, slide rails, and if necessary, the extension brackets to the drive.
5	Slide the drive partially into the system unit.
6	Connect the power cable (❷) and the data cable (❸) to the back of the drive.
7	Slide the drive fully into the system unit until the locking clips (❶) snap into the slots on the sides of the drive bay.

Installation or Replacement Illustration

Figure 11–9 shows how to install or replace a SCSI drive in a front drive bay.

Figure 11–9 Installing or Replacing a SCSI Drive in a Front Drive Bay



Replacing the Front Peripheral Bay Bezel

Summary

This section describes how to replace the front peripheral bay bezel after either removing or installing a bezel blanking plate. You must install a bezel blanking plate if you have removed a removable media SCSI device. You must remove a bezel blanking plate if you have installed a new removable media SCSI device.

Peripheral Bay Bezel Replacement

Table 11–10 lists the steps that you must follow to install or remove a bezel blanking plate and then replace the front peripheral bay bezel.

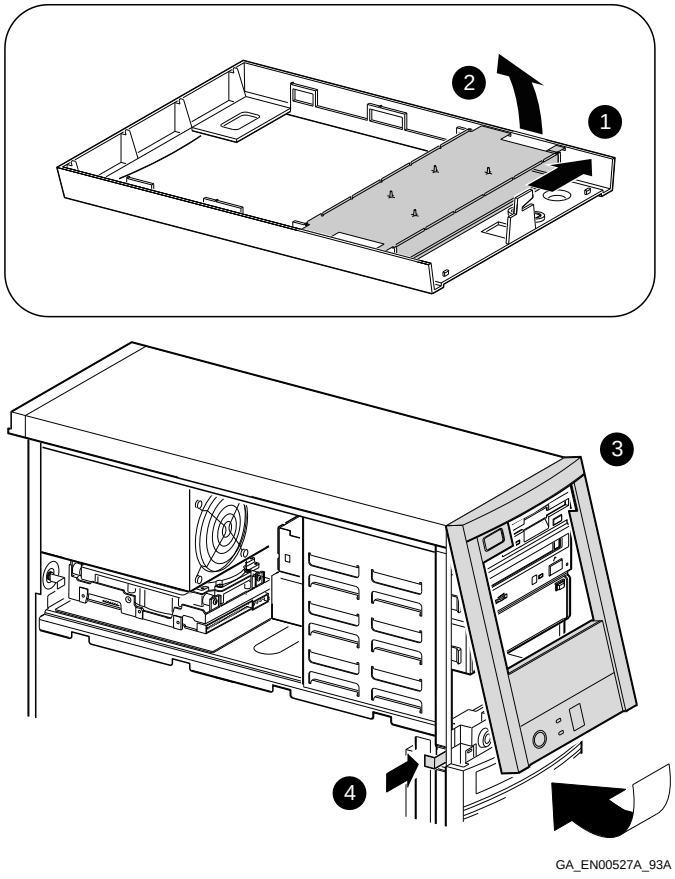
Table 11–10 Replacing the Front Peripheral Bay Bezel

Step	Action
1	To install or remove a bezel blanking plate, hold the peripheral bay bezel in both hands with the back facing you.
2	To remove a bezel blanking plate, free the bezel blanking plate clips by gently bending the side of the peripheral bay bezel (❶) beside the bezel blanking plate that you want to remove. Press the bezel blanking plate (❷) towards you and remove it.
3	To install a bezel blanking plate, insert the clips on one side of the bezel blanking plate in the slots on the side of the peripheral bay bezel. You must install the smaller clip in the bottom slot. Snap the bezel blanking plate clips into the slots on the other side of the peripheral bay bezel.
4	Pull the bezel locking-latch (❹) out until it stops.
5	Insert the hinges (❸) on the top of the front peripheral bay bezel into the slots on the system unit, then fit the bezel to the front of the system unit.
6	Push the bezel locking-latch (❹) in until it stops.

Replacement Illustration

Figure 11–10 shows how to replace the front peripheral bay bezel.

Figure 11–10 Replacing the Front Peripheral Bay Bezel



Removing a Disk Drive from the Rear Drive Bay

Summary

This section describes how to remove a 3.5-inch disk drive from the rear drive bay.

3.5-Inch Disk Drive Removal

Table 11–11 lists the steps that you must follow to remove a 3.5-inch disk drive from the rear drive bay.

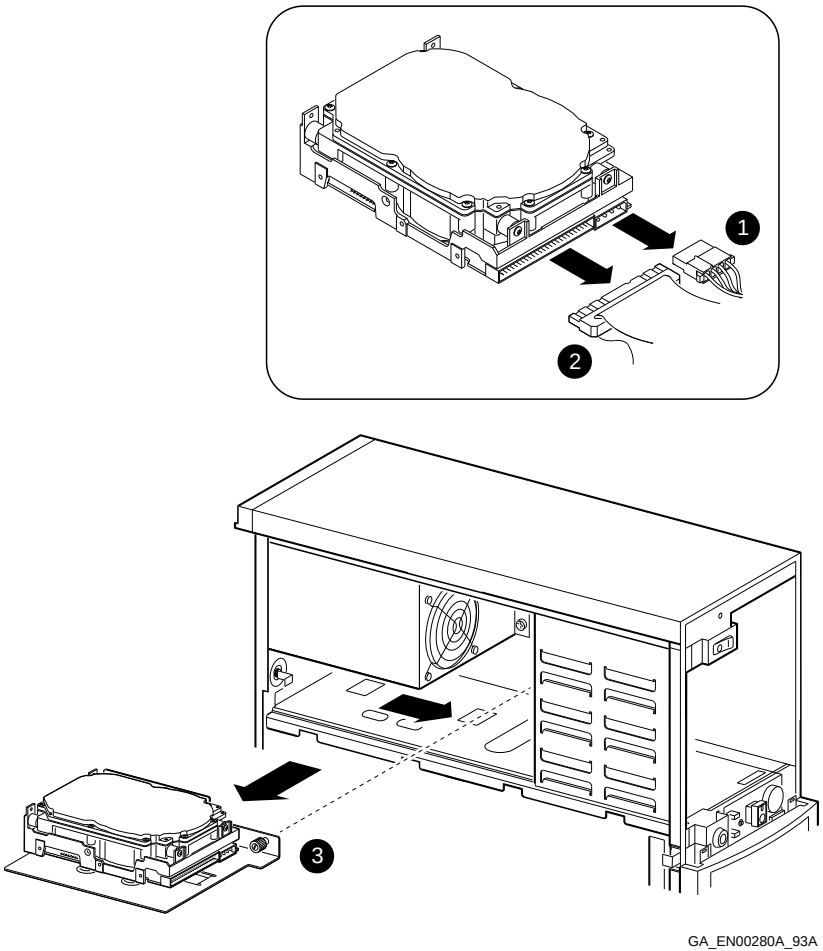
Table 11–11 Removing a 3.5-Inch Disk Drive

Step	Action
1	Disconnect the power cable (❶) and the data cable (❷) from the back of the drive.
2	Use a flat-head screwdriver to unscrew the captive screw (❸) securing the drive mounting bracket to the chassis.
3	Slide the drive forward to free the mounting bracket clips from their slots, then lift it and remove it from the drive bay.
4	Remove the 3.5-inch disk drive from the mounting bracket.

Rear Drive Removal Illustration

Figure 11–11 shows how to remove a 3.5-inch drive from the rear drive bay.

Figure 11–11 Removing a 3.5-Inch Drive from the Rear Drive Bay



Installing or Replacing a Disk Drive in the Rear Drive Bay

Summary

This section describes how to install or replace a 3.5-inch disk drive in the rear drive bay.

3.5-Inch Drive Installation or Replacement

Table 11–12 lists the steps that you must follow to install or replace a 3.5-inch disk drive in the rear drive bay.

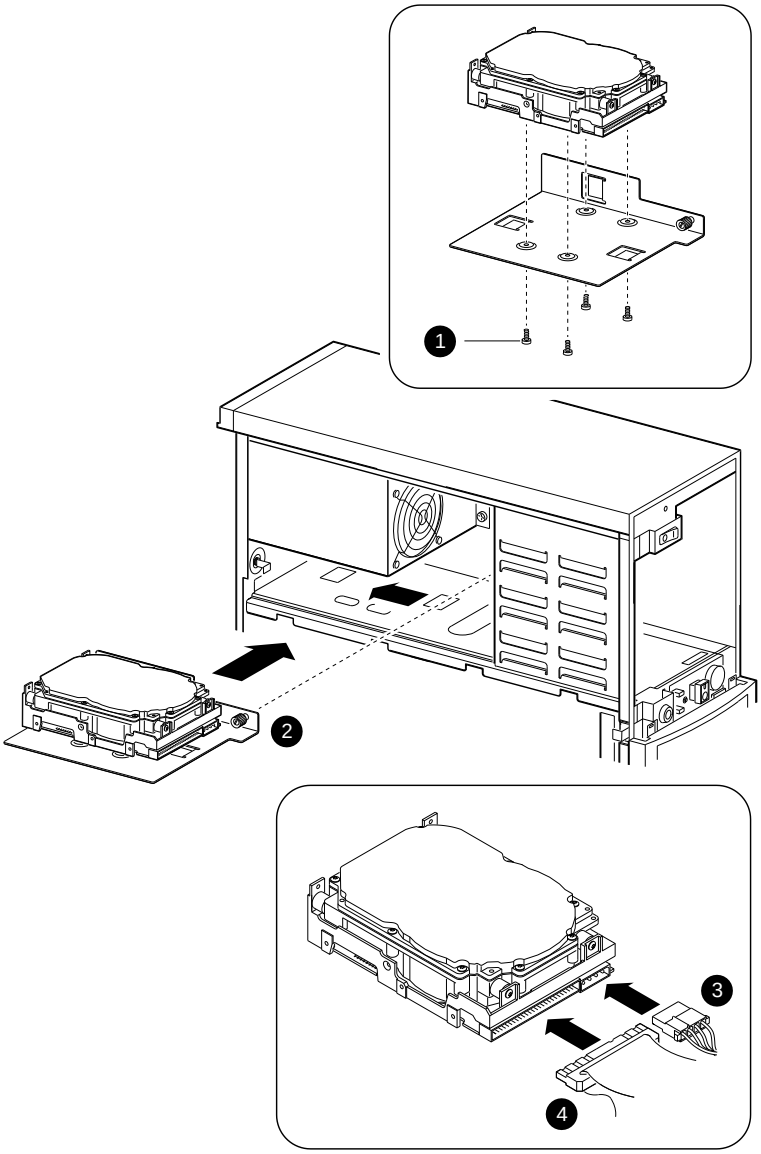
Table 11–12 Installing or Replacing a 3.5-Inch Disk Drive

Step	Action
1	If necessary, see the section entitled Before You Begin for information on the sections that you must read before continuing with this procedure.
2	If you are replacing a drive, remove the original drive if you have not done so already.
3	If you are replacing a drive, set the SCSI ID on the replacement drive to the same ID as the original drive. If you are installing a drive, set the SCSI ID on the new drive to an available ID. See Appendix A or the documentation supplied with the drive for information on setting the SCSI IDs.
4	Attach the 3.5-inch disk drive to the drive mounting bracket using the screws (❶) provided, or those that you removed from the original drive.
5	Insert the mounting bracket and disk drive assembly into the system unit, and push it backwards to secure the two mounting bracket clips in the appropriate slots on the chassis.
6	Use a flat-head screwdriver to tighten the captive screw (❷) that secures the drive mounting bracket to the chassis.
7	Connect the power cable (❸) and the data cable (❹) to the back of the drive.

Installation or Replacement Illustration

Figure 11–12 shows how to install or replace a 3.5-inch drive in the rear drive bay.

Figure 11–12 Installing or Replacing a 3.5-Inch Drive in the Rear Drive Bay



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Testing the System Device Configuration

Summary

This section describes how to test the system device configuration.

Important Information

Caution

Reassemble the system following the procedures listed in Chapter 9 before you turn on the system unit.

Testing the Configuration

Table 11–13 lists the steps that you must follow to test the system device configuration.

Table 11–13 Testing the System Device Configuration

Step	Action	Result
1	If necessary, access the OpenVMS and OSF/1 console.	The system displays the console prompt (>>>).
2	Enter the SHOW DEVICE command (❶) to display the system device configuration.	The system responds with a display similar to Example 11–2.
3	Examine the BOOTDEV column (❷) to make sure that the new device (❹) is listed.	If the device is not listed, see Chapter 6 for information on troubleshooting.
4	For SCSI devices, examine the ADDR column (❸) to make sure that the SCSI ID in each SCSI address is unique.	If the SCSI ID is not unique, you must reset the SCSI ID on the new device to an unused SCSI ID. See the Appendix A or the device documentation for information on setting the SCSI IDs.

Updated SHOW DEVICE Display

Example 11–2 shows a sample of an updated SHOW DEVICE display.

Example 11–2 Updated SHOW DEVICE Display

```
>>> SHOW DEVICE ❶
    ❷          ❸
  BOOTDEV      ADDR      DEVTYPE    RM/FX    DEVNAM      REV     NUMBYTES
  -------      ----      -------    -----    ------      ---     --------
  ERA0         08-00-2B-2E-2E-C3
  DVA0         PC Floppy DISK       RM
  SCSI Devices..
  DKA0         A/0/0     DISK       FX       RZ25        0700    426.25MB
  DKA100❹       A/1/0     DISK       FX       RZ25        0700    426.25MB
  MKA200       A/2/0     TAPE       RM       TZK10       03B8    ......
  DKA400       A/4/0     RODISK     RM       RRD42       4.5d    ......
  HOST         A/5/0     PROC                AHA1742A    G
```

12

Installing and Removing Memory and the NVR Battery

Introduction

This chapter describes how to replace the nonvolatile RAM (NVR) battery. It also describes how to configure and handle memory options inside the system unit and how to install and replace the memory modules in the memory options.

In This Chapter

This chapter contains the following sections:

- Replacing the NVR Battery
- Disconnecting the SCSI Option Board Ribbon Cables
- Handling and Configuring Memory Options
- Installing or Replacing Memory
- Testing the Memory Modules Installation

Replacing the NVR Battery

Summary

This section describes how to remove and replace the NVR battery when it has a low charge. The NVR battery maintains the information in the nonvolatile RAM. This information includes important system defaults and settings.

Buying Replacement NVR Batteries

The system uses an industry-standard 4.5 Volt computer clock battery. You can order replacement batteries directly from Digital or you can purchase them from your local computer or electronic supplies vendor.

Important Information

Caution

Static electricity can damage electronic components. Use an antistatic wrist strap while handling these components (see Appendix B).

NVR Battery Replacement Procedure

Table 12–1 lists the steps that you must follow to replace the NVR battery.

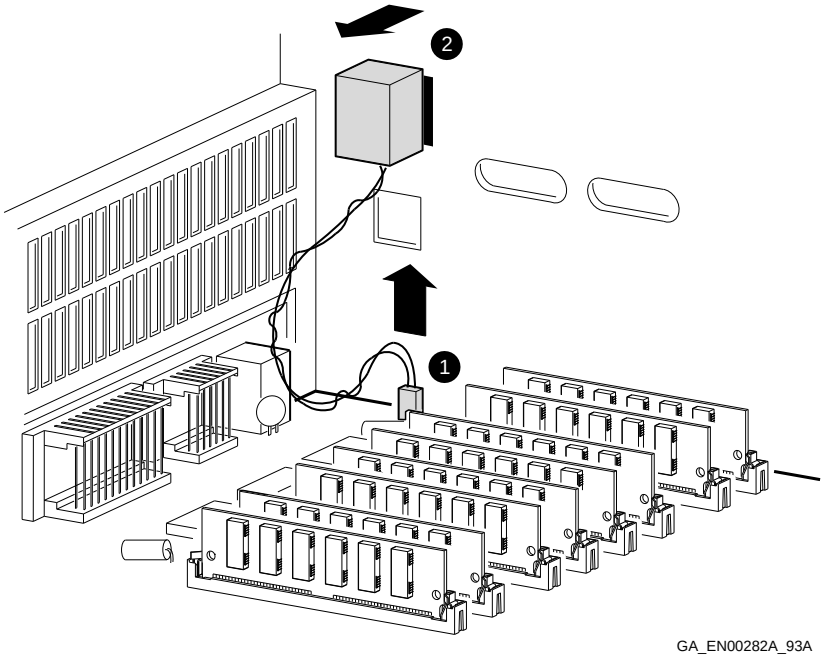
Table 12–1 Replacing the NVR Battery

Step	Action
1	Remove the system unit covers following the procedure in Chapter 9.
2	Disconnect the battery cable (❶) from the connector on the system module.
3	Remove the NVR battery from the system unit by separating it from the velcro strip (❷).
4	Attach the replacement NVR battery to the velcro strip on the system unit.
5	Connect the battery cable to the connector on the system unit.
6	Reassemble the system unit following the procedure in Chapter 9.

Illustrated NVR Battery Replacement Procedure

Figure 12–1 shows how to replace the NVR battery.

Figure 12–1 Replacing the NVR Battery



Disconnecting the SCSI Option Board Ribbon Cables

Summary

To access the components beneath the large inside cover, you must disconnect the SCSI option board ribbon cables. This section describes how to complete this task.

Important Information

Caution

Static electricity can damage electronic components. Use an antistatic wrist strap while handling these components (see Appendix B).

Disconnection Procedure

Table 12–2 lists the steps that you must follow to disconnect both SCSI option board ribbon cables.

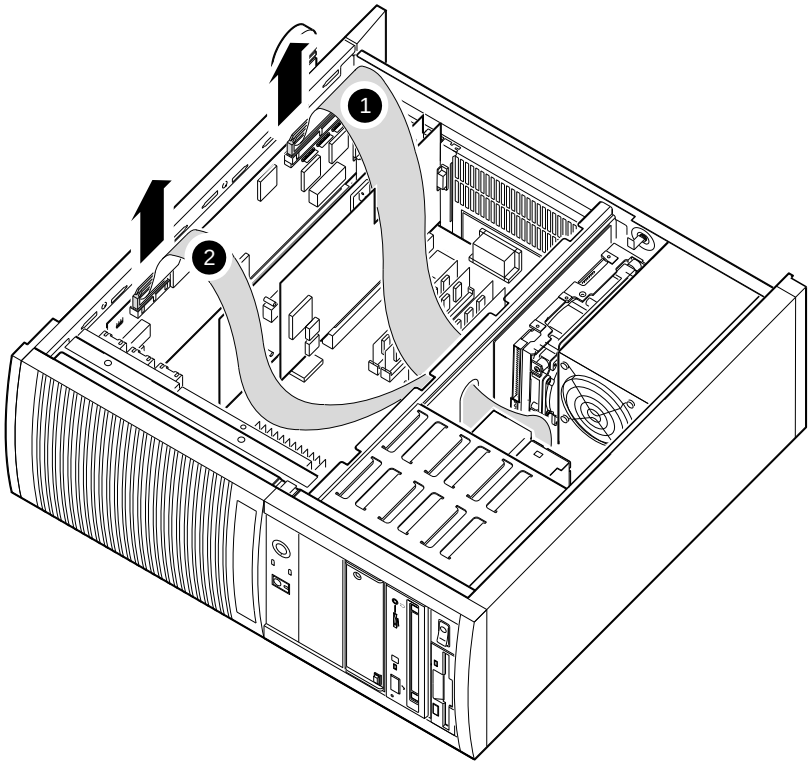
Table 12–2 Disconnecting the SCSI Option Board Ribbon Cables

Step	Action
1	If necessary, remove the system unit covers following the procedure in Chapter 9.
2	Disconnect the larger ribbon cable (❶) and place it out of your way.
3	Disconnect the smaller ribbon cable (❷) and place it out of your way.

Illustrated Disconnection Procedure

Figure 12–2 shows how to disconnect both SCSI option board ribbon cables.

Figure 12–2 Disconnecting the SCSI Option Board Ribbon Cables



Handling and Configuring Memory Options

Summary

This section describes how to handle memory options and how to configure them inside the system unit.

Important Information

Caution

- Static electricity can damage electronic components. Use an antistatic wrist strap while handling these components (see Appendix B).
- You may have to remove other memory modules to access a particular memory module. Note the position of any memory modules that you remove and reinstall them in the same location.
- The memory modules are keyed to prevent incorrect orientation. Do not force a memory module into a memory connector.

Configuring Memory

The system unit supports eight memory module connectors on the system module. These memory connectors are logically grouped in two memory banks. Figure 12–3 shows the memory banks and identifies the memory module connectors associated with each bank. You must follow the following rules when installing memory modules in these banks:

- Bank 0 must contain a memory option.
- A memory option consists of four memory modules. When you install a memory option in a memory bank, you must install a memory module in all of the connectors in that bank.
- Do not install different types of memory modules in the same bank.
- DEC 2000 Model 300 AXP systems require a minimum memory size of 32M bytes.

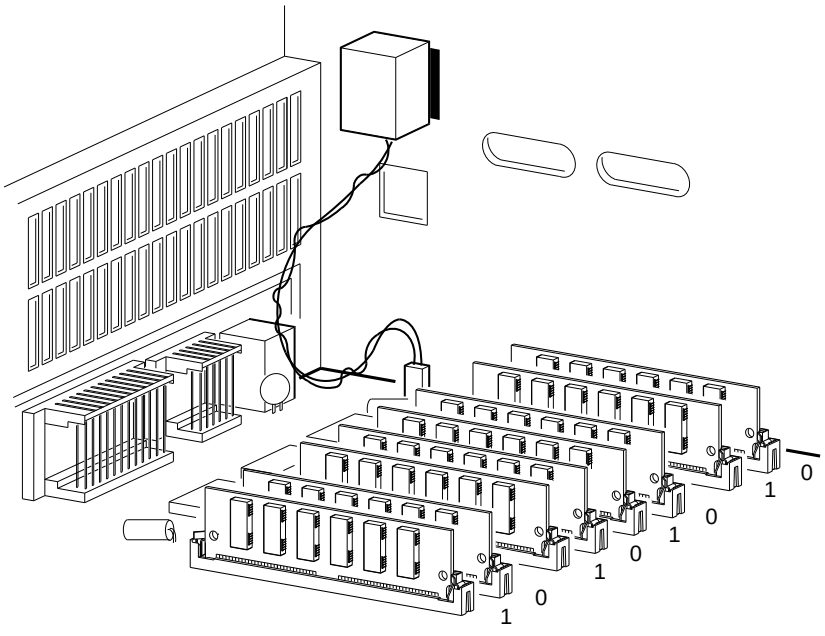
Supported Memory Options

The system unit supports two sizes of memory option: 16M bytes and 64M bytes. Using combinations of these two memory options, the system supports between 16M bytes and 128M bytes of memory.

Memory Banks and Associated Memory Module Connectors

Figure 12–3 shows memory bank 0 and memory bank 1 and their associated memory module connectors.

Figure 12–3 Memory Banks and Associated Connectors



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Installing or Replacing Memory

Summary

This section describes the following tasks:

- Installation of a second memory option in a system configured with only one memory bank occupied
- Replacement of a 16M-byte memory option in a memory bank with a 64M-byte memory option or vice versa
- Replacement of one or more faulty memory modules

Memory Module Installation or Replacement Procedure

Table 12–3 lists the steps that you must follow to install or replace memory modules.

Note

You may need to remove other memory modules to access particular memory modules or memory connectors. You must replace these other modules in the locations from which you removed them.

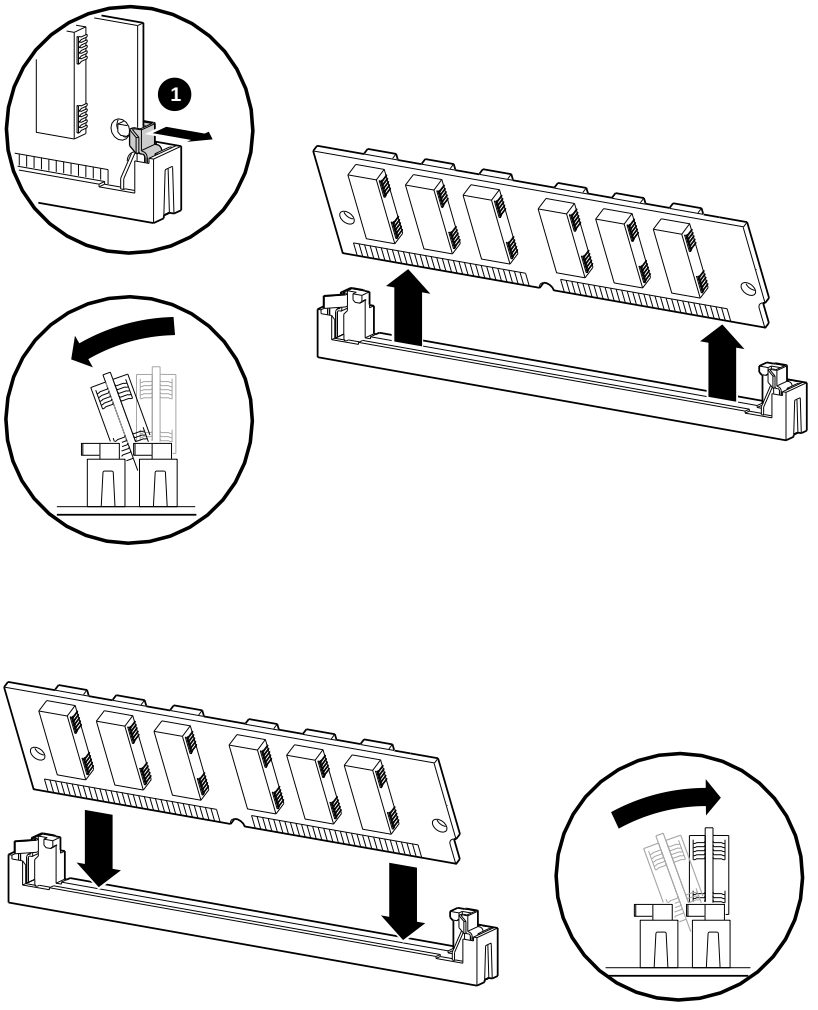
Table 12–3 Installing or Replacing Memory Modules

Step	Action
1	Read the section entitled Handling and Configuring Memory Options before you continue.
2	Remove the appropriate memory modules by holding back the metal clips on the memory module connector, tilting the memory module, and lifting it out of its connector.
3	Install a new memory module if the one you removed is faulty or if you are upgrading a memory bank.
4	Reinstall the memory modules you removed for access purposes.

Illustrated Installation or Replacement Procedure

Figure 12–4 shows how to install or replace a memory option.

Figure 12–4 Installing or Replacing a Memory Option



Testing the Memory Modules Installation

Summary

This section describes how to test the memory modules and verify that they work correctly.

Important Information

Caution

Reassemble the system following the procedures listed in Chapter 9 before you turn on the system unit.

Testing the Memory

After you have completed installing the memory modules, you must test the connections. Enter the command shown in Example 12–1 to display the memory configuration. If the resulting display does not show the correct memory size or configuration, enter the command shown in Example 12–2 to test the memory modules. If the resulting display contains question marks and error messages, check the memory module connections again. If the memory modules are installed correctly, contact your Digital service representative.

SHOW MEMORY Command Example

Example 12–1 shows an example of the SHOW MEMORY command and the memory configuration display.

Example 12–1 SHOW MEMORY Command and Memory Configuration Display

```
>>> SHOW MEMORY

DEC 2000 Model 300 AXP Memory Configuration: 32 Mbytes
-----------------------------------------------------
BANK #      MEMORY_SIZE        START_ADDRESS
------      -----------        -------------
0            016 Mbytes        0x00000000
1            016 Mbytes        0x01000000

>>>
```

TEST MEM Command Example

Example 12–2 shows an example of the TEST MEM command and a sample display where the test passes.

Example 12–2 TEST MEM Command and Display

```
>>> TEST MEM
T-STS-MEM - Cell Test 00200000 <-> 04000000
T-STS-MEM -      Wr AAAAAAAA Addr 02800000
T-STS-MEM -      FWD - Rd AAAAAAAA Wr 55555555 Addr 01800000
T-STS-MEM -      REV - Rd 55555555 Wr AAAAAAAA Addr 02800000
T-STS-MEM - Addr Test 00200000 -> 04000000
T-STS-MEM -      Wr Data = Addr 03000000
T-STS-MEM -      Rd Data = Addr 02800000
T-STS-MEM - LLSC Test Addr 00200000
T-STS-MEM - Clr Mem 00200000 -> 04000000
T-STS-MEM -      Wr 00000000 Addr 02800000

OK

>>>
```

A

Setting Storage Device Jumpers and Switches

Introduction

This appendix describes how to set the jumpers and switches on the following devices:

- RRD42 CD-ROM drive
- RZ24L, RZ25, and RZ26 disk drives
- TLZ06 and TZK10 tape drives

In This Appendix

This appendix contains the following sections:

- Setting the Jumpers on the RRD42 CD-ROM Drive
- Setting the Jumpers on the RZ24L Disk Drive
- Setting the Jumpers on the RZ25 Disk Drive
- Setting the Jumpers on the RZ26 Disk Drive
- Setting the Switches on the TLZ06 Tape Drive
- Setting the Jumpers on the TZK10 Tape Drive

Setting the Jumpers on the RRD42 CD-ROM Drive

Summary

This section shows the location of the jumpers on the RRD42 CD-ROM drive and describes how to set these jumpers.

Setting Jumpers

A jumper is a metal contact, in a plastic case, used to complete an electrical connection between two adjacent pins. The presence or absence of the jumpers in particular locations determines the drive settings. To change the drive settings, either install a jumper in the location indicated, or use a small flat-head screwdriver to remove it.

Caution

Be careful not to break the metal pins or the jumper when removing it.

RRD42 Jumper Settings

Table A–1 describes how to set the jumpers on the RRD42 CD-ROM drive.

Table A–1 RRD42 Jumper Settings

Step	Action
1	Make sure that the MODE jumper is installed.
2	Set the SCSI ID SELECT jumpers to an unused SCSI ID. The ID select jumpers have the following values: • Jumper 0—1 • Jumper 1—2 • Jumper 2—4 The sum of the installed jumpers equals the SCSI ID. For example, when none of the jumpers are installed, the SCSI ID is 0, when jumper 2 is installed the SCSI ID is 4, and when jumper 0 and jumper 2 are installed the SCSI ID is 5.

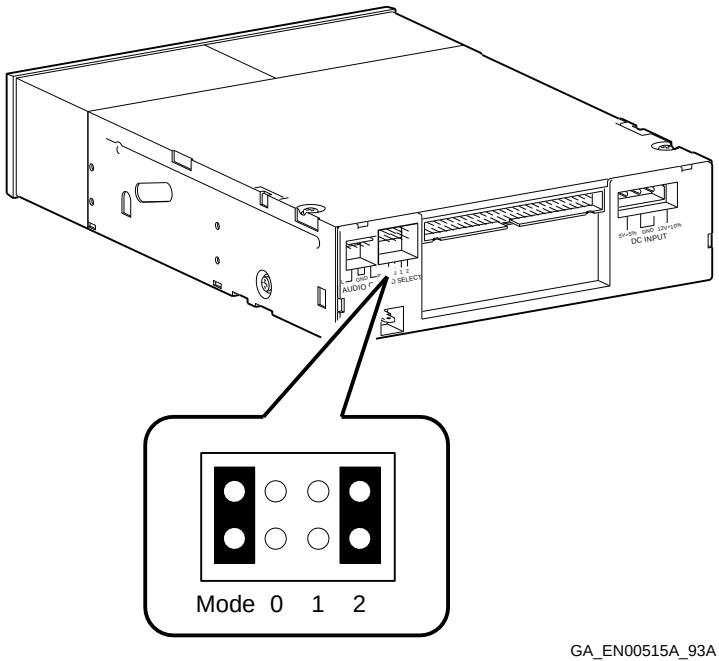
Default Settings

The default SCSI ID setting for the RRD42 CD-ROM drive in a DECpc AXP 150 system is 4. This is the value the Windows NT firmware uses when installing the operating system from compact disc and when completing other tasks.

RRD42 Jumper Locations

Figure A–1 shows the location of the jumpers on the RRD42 CD-ROM drive.

Figure A–1 RRD42 Jumper Locations



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Setting the Jumpers on the RZ24L Disk Drive

Summary

This section shows the location of the jumpers on the RZ24L disk drive and describes how to set these jumpers.

Setting Jumpers

A jumper is a metal contact, in a plastic case, used to complete an electrical connection between two adjacent pins. The presence or absence of the jumpers in particular locations determines the drive settings. To change the drive settings, either install a jumper in the location indicated, or use a small flat-head screwdriver to remove it.

Caution

Be careful not to break the metal pins or the jumper when removing it.

RZ24L Jumper Settings

Table A–2 describes how to set the jumpers on the RZ24L disk drive.

Table A–2 RZ24L Jumper Settings

Step	Action
1	Make sure that the wait spin (WS) jumper is *removed*.
2	Set the SCSI ID SELECT jumpers to an unused SCSI ID. The ID select jumpers have the following values: • Jumper A0 equals 1 • Jumper A1 equals 2 • Jumper A2 equals 4 The sum of the installed jumpers equals the SCSI ID. For example, when none of the jumpers are installed, the SCSI ID is 0, when jumper A2 is installed the SCSI ID is 4, and when jumper A0 and jumper A2 are installed the SCSI ID is 5 (1 + 4).

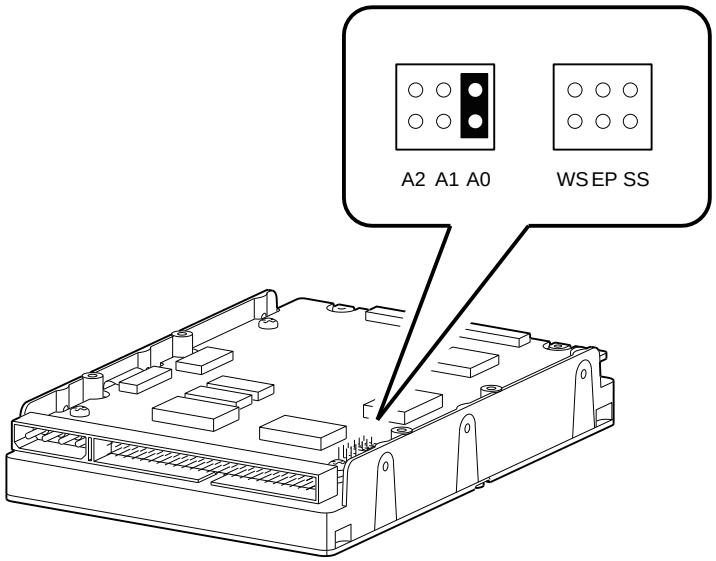
Default Settings

Disk drives normally use SCSI IDs in the range 0 to 3. SCSI ID 0 is reserved for the system disk in DECpc AXP 150 and DEC 2000 Model 300 AXP systems.

RZ24L Jumper Locations

Figure A–2 shows the location of the jumpers on the RZ24L disk drive.

Figure A–2 RZ24L Jumper Locations



Setting the Jumpers on the RZ25 Disk Drive

Summary

This section shows the location of the jumpers on the RZ25 disk drive and describes how to set these jumpers.

Setting Jumpers

A jumper is a metal contact, in a plastic case, used to complete an electrical connection between two adjacent pins. The presence or absence of the jumpers in particular locations determines the drive settings. To change the drive settings, either install a jumper in the location indicated, or use a small flat-head screwdriver to remove it.

Caution

Be careful not to break the metal pins or the jumper when removing it.

RZ25 Jumper Settings

Table A–3 describes how to set the jumpers on the RZ25 disk drive.

Table A–3 RZ25 Jumper Settings

Step	Action
1	Make sure that the wait-spin jumper (jumper 2) is *removed* and that jumpers 5, 7, and 8 are installed.
2	Set the SCSI ID SELECT jumpers to an unused SCSI ID. The ID select jumpers have the following values: • Jumper A0 equals 1 • Jumper A1 equals 2 • Jumper A2 equals 4 The sum of the installed jumpers equals the SCSI ID. For example, when none of the jumpers are installed, the SCSI ID is 0, when jumper A2 is installed the SCSI ID is 4, and when jumper A0 and jumper A2 are installed the SCSI ID is 5 (1 + 4).

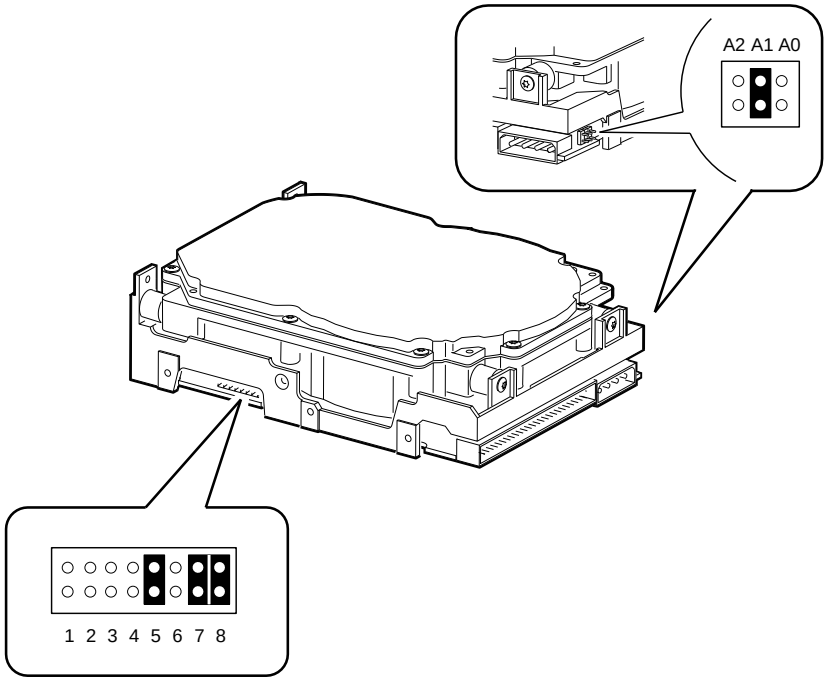
Default Settings

Disk drives normally use SCSI IDs in the range 0 to 3. SCSI ID 0 is reserved for the system disk in DECpc AXP 150 and DEC 2000 Model 300 AXP systems.

RZ25 Jumper Locations

Figure A–3 shows the location of the jumpers on the RZ25 disk drive.

Figure A–3 RZ25 Jumper Locations



Setting the Jumpers on the RZ26 Disk Drive

Summary

This section shows the location of the jumpers on the RZ26 disk drive and describes how to set these jumpers.

Setting Jumpers

A jumper is a metal contact, in a plastic case, used to complete an electrical connection between two adjacent pins. The presence or absence of the jumpers in particular locations determines the drive settings. To change the drive settings, either install a jumper in the location indicated, or use a small flat-head screwdriver to remove it.

Caution

Be careful not to break the metal pins or the jumper when removing it.

RZ26 Jumper Settings

Table A–4 describes how to set the jumpers on the RZ26 disk drive.

Table A–4 RZ26 Jumper Settings

Step	Action
1	Make sure that the wait spin jumper (jumper 7) is *installed*.
2	Set the SCSI ID SELECT jumpers to an unused SCSI ID. The ID select jumpers have the following values: • Jumper 1 equals 1 • Jumper 2 equals 2 • Jumper 3 equals 4 The sum of the installed jumpers equals the SCSI ID. For example, when none of the jumpers are installed, the SCSI ID is 0, when jumper 3 is installed the SCSI ID is 4, and when jumper 1 and jumper 3 are installed the SCSI ID is 5 (1 + 4).

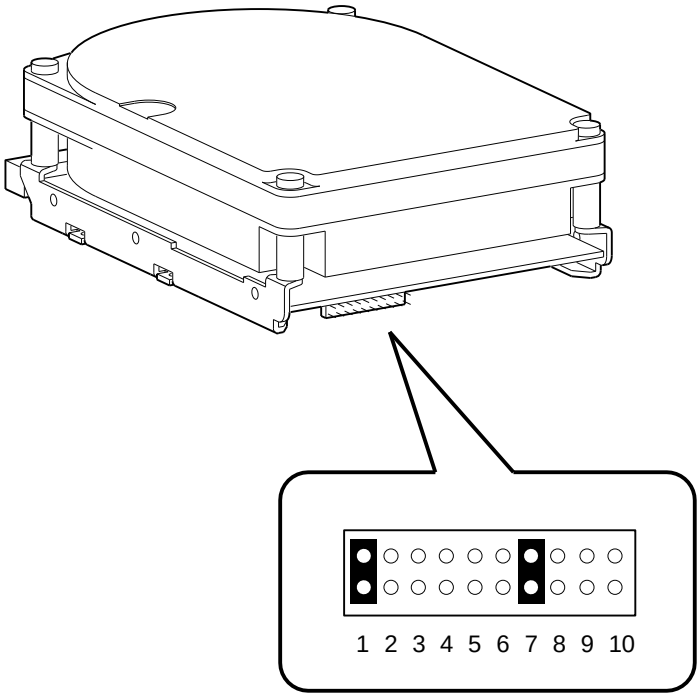
Default Settings

Disk drives normally use SCSI IDs in the range 0 to 3. SCSI ID 0 is reserved for the system disk in DECpc AXP 150 and DEC 2000 Model 300 AXP systems.

RZ26 Jumper Locations

Figure A–4 shows the location of the jumpers on the RZ26 disk drive.

Figure A–4 RZ26 Jumper Locations



Setting the Switches on the TLZ06 Tape Drive

Summary

This section shows the location of the switches on the TLZ06 tape drive and describes how to set these switches.

TLZ06 Switch Settings

Table A–5 describes how to set the switches on the TLZ06 tape drive.

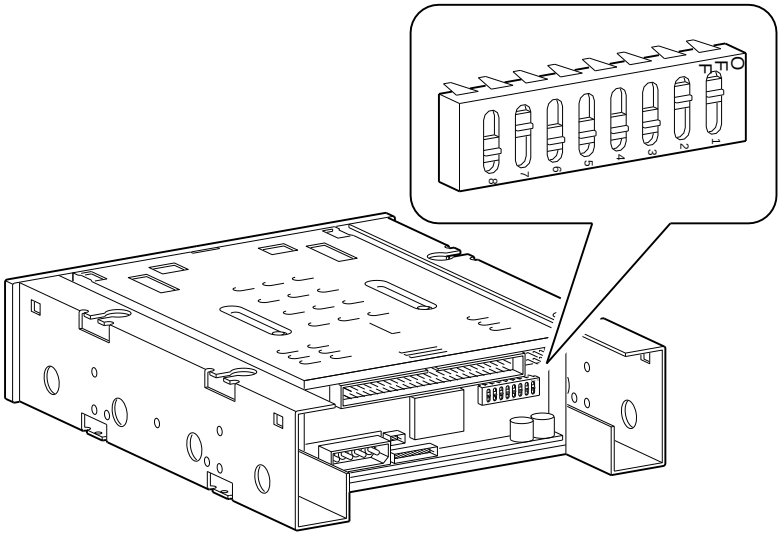
Table A–5 TLZ06 Switch Settings

Step	Action
1	Make sure that switch 7 remains in the off (up) position and that switches 4, 5, 6, and 8 remain in the on (down) position.
2	Set the SCSI ID SELECT switches to an unused SCSI ID. The ID select switches have the following values: • Switch 1 equals 1 • Switch 2 equals 2 • Switch 3 equals 4 The sum of the installed switches equals the SCSI ID. For example, when none of the switches are in the on (down) position, the SCSI ID is 0, when switch 3 is in the on position the SCSI ID is 4, and when switch 1 and switch 3 are in the on position the SCSI ID is 5 (1 + 4).

TLZ06 Switch Locations

Figure A–5 shows the location of the switches on the TLZ06 tape drive.

Figure A–5 TLZ06 Switch Locations



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Setting the Jumpers on the TZK10 Tape Drive

Summary

This section shows the location of the jumpers on the TZK10 tape drive and describes how to set these jumpers.

Setting Jumpers

A jumper is a metal contact, in a plastic case, used to complete an electrical connection between two adjacent pins. The presence or absence of the jumpers in particular locations determines the drive settings. To change the drive settings, either install a jumper in the location indicated, or use a small flat-head screwdriver to remove it.

Caution

Be careful not to break the metal pins or the jumper when removing it.

TZK10 Jumper Settings

Table A–6 describes how to set the jumpers on the TZK10 tape drive.

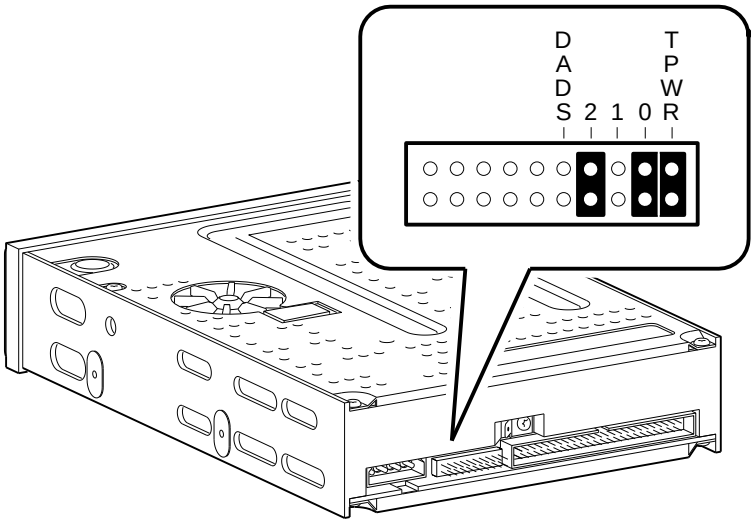
Table A–6 TZK10 Jumper Settings

Step	Action
1	Make sure that the disable auto-density (DADS) jumper is *removed* and that the terminator power (TPWR) jumper is installed.
2	Set the SCSI ID SELECT jumpers to an unused SCSI ID. The ID select jumpers have the following values: • Jumper 0 equals 1 • Jumper 1 equals 2 • Jumper 2 equals 4 The sum of the installed jumpers equals the SCSI ID. For example, when none of the jumpers are installed, the SCSI ID is 0, when jumper 2 is installed the SCSI ID is 4, and when jumper 0 and jumper 2 are installed the SCSI ID is 5 (1 + 4).

TZK10 Jumper Locations

Figure A–6 shows the location of the jumpers on the TZK10 tape drive.

Figure A–6 TZK10 Jumper Locations



B

Antistatic Precautions

Introduction

This appendix describes the antistatic precautions that you must take when handling the system internal components to prevent damaging those components.

In This Appendix

This appendix contains the following section:

- Using the Antistatic Wrist Strap

Using the Antistatic Wrist Strap

Summary

This section describes how to attach the antistatic wrist strap to your wrist and to the system unit. It also describes how to remove the antistatic wrist strap and store it for future use.

Important Information

Caution

Do not disconnect the system unit power cord or unplug the power cord from the power supply socket. The power cord grounds the system unit, preventing damage to the internal components.

Attaching the Antistatic Wrist Strap

Table B–1 describes how to attach the antistatic wrist strap to your wrist and to the system unit.

Table B–1 Attaching the Antistatic Wrist Strap

Step	Action
1	Set the on/off switches on all peripherals and on the system unit to the off position.
2	Locate and remove the wrist strap from an envelope labeled *Disposable Grounding Wrist Strap*. Save the envelope. You need it to store the wrist strap after you use it.
3	After you remove the outside cover and the internal covers from the system unit, remove the protective paper from the metal strip at the end of the wrist strap. Save the paper. You need it to store the wrist strap after you use it.
4	Firmly attach the metal strip (❶) to a clean metal surface in the system unit.
5	Keeping the sticky side down, wrap the other end of the wrist strap twice around your wrist.

Removing and Storing the Antistatic Wrist Strap

Table B–2 describes how to remove the antistatic wrist strap and store it for future use.

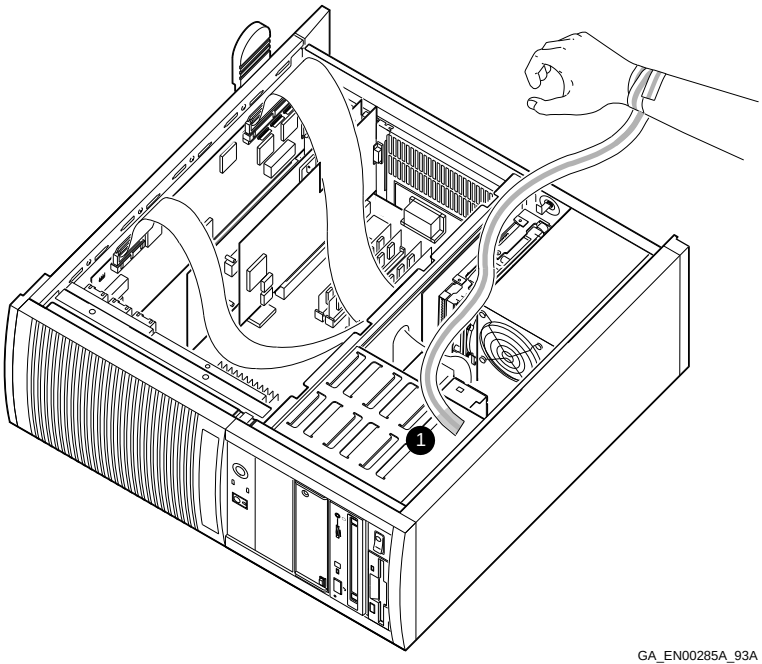
Table B–2 Removing and Storing the Antistatic Wrist Strap

Step	Action
1	After you have finished handling the internal components, remove the metal strip from the system unit.
2	Cover the metal strip with the protective paper that you removed earlier.
3	Unwrap the wrist strap from your wrist.
4	Fold the wrist strap and store it in the envelope that you saved earlier.

Antistatic Wrist Strap Illustration

Figure B–1 shows how to attach the antistatic wrist strap to your wrist and to the system unit.

Figure B–1 Attaching the Antistatic Wrist Strap



C

Using the Fail-Safe Booter

Introduction

This appendix describes how to use the fail-safe booter to recover the system firmware if, for example, the power fails during the firmware update procedure.

In This Appendix

This appendix contains the following section:

- Using the Fail-Safe Booter

Using the Fail-Safe Booter

Summary

This section describes when and how you use the fail-safe booter (FSB) program, located in NVRAM, to recover the system firmware.

When to Use the FSB

You use the FSB in the following situations:

- When the power fails during a firmware upgrade
- When you accidentally turn the system off during a firmware upgrade

Running the FSB

The FSB runs automatically when you restore power to the system, if the power failed during a firmware upgrade. Make sure that the diskette containing the JNUPDATE.EXE program is inserted in the diskette drive. The FSB reads the diskette drive and runs the JNUPDATE program. See Chapter 2 for information on completing the firmware upgrade procedure.

Example

Example C–1 shows an example of the messages the FSB displays when it runs.

Example C–1 FSB Messages

```
DEC FailSafe Booter, Version 1.09
Copyright (c) 1992, 1993 Microsoft Corporation
Copyright (c) 1993 Digital Equipment Corporation

This is running because an update to your system firmware was
interrupted.

** If you were not just attempting a firmware update, contact
** your Digital Field Service representative!

Looking for eisa()disk()fdisk()jnupdate.exe...
```

D

Connector Pin Specifications

Introduction

This appendix lists the pin specifications of the standard system connectors.

In This Appendix

This appendix contains the following sections:

- Keyboard and Mouse Connector Pin Specifications
- Serial Port Pin Specifications
- Parallel Port Pin Specifications

Keyboard and Mouse Connector Pin Specifications

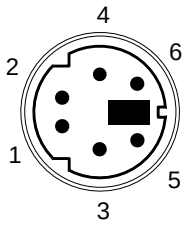
Summary

This section lists the pin specifications for the keyboard and mouse connectors.

Keyboard and Mouse Connector Illustration

Figure D–1 shows the pin numbers on the keyboard and mouse connectors.

Figure D–1 Keyboard and Mouse Connector



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Keyboard and Mouse Connector Pin Specifications

Table D–1 describes the functions of the pins on the keyboard and mouse connectors.

Table D–1 Keyboard and Mouse Connector Pin Specifications

Pin	Function
1	Data
2	Unused
3	Ground
4	+5 Volts dc
5	Clock
6	Unused

Serial Port Pin Specifications

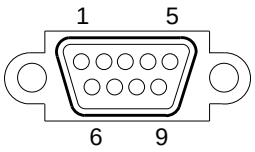
Summary

This section lists the pin specifications for the serial port.

Serial Port Illustration

Figure D–2 shows the pin numbers on the serial port.

Figure D–2 Serial Port



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Serial Port Pin Specifications

Table D–2 describes the functions of the pins on the serial port.

Table D–2 Serial Port Pin Specifications

Pin	Function
1	Carrier detect
2	Receive data
3	Transmit data
4	Data term ready
5	Signal ground
6	Data set ready
7	Request to send
8	Clear to send
9	Ring indicator

Parallel Port Pin Specifications

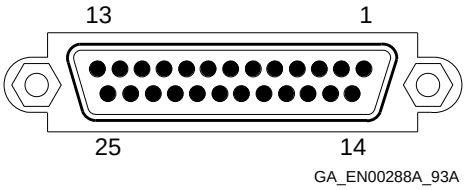
Summary

This section lists the pin specifications for the parallel port.

Parallel Port Illustration

Figure D–3 shows the pin numbers on the parallel port.

Figure D–3 Parallel Port



Parallel Port Pin Specifications

Table D–3 describes the functions of the pins on the parallel port.

Table D–3 Parallel Port Pin Specifications

Pin	Function	Pin	Function
1	Strobe	14	Auto linefeed
2	Data bit 0	15	Error
3	Data bit 1	16	Initialize printer
4	Data bit 2	17	Select in
5	Data bit 3	18	Signal ground
6	Data bit 4	19	Signal ground
7	Data bit 5	20	Signal ground
8	Data bit 6	21	Signal ground
9	Data bit 7	22	Signal ground
10	Acknowledge	23	Signal ground
11	Busy	24	Signal ground
12	Paper end	25	Signal ground
13	Select		

E

Hardware Specifications

Introduction

This appendix lists the hardware specifications of the system unit.

In This Appendix

This appendix contains the following sections:

- System Unit Specifications
- Environmental Specifications

System Unit Specifications

Summary Table E–1 lists the specifications for the system unit.

Table E–1 System Specifications

Subject	Description
Processor	DECchip 21064 (EV4 P2 or P3).
Boot and diagnostic firmware ROM	1M bytes.
DRAM memory	16M bytes, expandable to 128M bytes.
Storage devices	Contact your Digital sales representative for information on the list of supported storage devices.
Terminals	Supports the VT series.
Monitors	Contact your Digital sales representative for information on the list of supported monitors.
Interfaces	One keyboard port, one mouse port, two serial ports, one parallel port, six EISA connectors.

Table E–2 System Unit Metrics

Weight† kg (lb)	Height cm (in)	Width cm (in)	Depth cm (in)
21.0 (46.0)	47.4 (18.7)	17.8 (7.0)	49.5 (19.5)

†Depends on the configuration. The values shown in this table are typical values. Values vary depending on the options that you install.

Table E–3 System Electrical Specifications (Typical)

Subject	240 Volt Setting	120 Volt Setting
Input voltages (Volts)	180 to 264	90 to 132
Frequency (Hertz)	47 to 63	47 to 63
Steady state current (Amps)	3.4	5.99
Maximum inrush current (Amps)	46	28
Power consumption (Watts)	254	254

Environmental Specifications

Summary Table E–4 lists the environmental specifications for the system.

Table E–4 System Operating Conditions and Nonoperating Conditions

Operating Conditions	Range or Value
Temperature range	10°C (50°F) to 35°C (95°F)
Relative humidity	10% to 90% noncondensing
Maximum wet bulb temperature	28°C (82°F)
Minimum dew point	2°C (36°F)
Altitude	2000 m (6562 ft)
Nonoperating Conditions	
Temperature range	–40°C (–40°F) to 66°C (151°F)
Relative humidity	10% to 90%
Altitude	3600 m (12 000 ft)
Maximum wet bulb temperature	32°C (90°F)

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