

# MicroVAX 3100 Model 90

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## Operator Information

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This guide describes how to operate the MicroVAX 3100 Model 90 system.

**Digital Equipment Corporation  
Maynard, Massachusetts**

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## Preface

This manual describes how to operate the MicroVAX™ 3100 Model 90. It also contains information on using software storage devices, connecting the system to a network, and connecting hardware options to the system.

### Audience

This manual is intended for anyone using a MicroVAX 3100 Model 90. It is written for both experienced and inexperienced users.

### Structure of This Manual

This manual is divided into four chapters, two appendixes, a glossary, and an index:

- Chapter 1 describes the Model 90 system unit.
- Chapter 2 describes how to use the software storage and loading devices that are internal to the system.
- Chapter 3 describes how to connect the system to a network.
- Chapter 4 describes how to connect hardware options to the system.
- Appendix A gives the list of associated and related documents.
- Appendix B describes how to handle and care for removable software storage media.
- The glossary defines some of the technical terms used in this manual.

### Additional Information

See Appendix A for the list of associated and related documents.

## Conventions

The following conventions are used in this manual:

Convention	Description
MONOSPACE	Text displayed on the screen is shown in monospace type.
<b>boldface type</b>	Boldface type in examples indicates user input. Boldface type in text indicates the first instance of terms defined either in the text, in the glossary, or both.
<i>italic type</i>	Italic type emphasizes important information, indicates variables, and indicates complete titles of manuals.
<i>nn nnn. nnn nn</i>	A space character separates digits in numerals with 5 or more digits. For example, <i>10 000</i> equals <i>ten thousand</i> .
<i>n. nn</i>	A period in numerals signals the decimal point indicator. For example, <i>1.75</i> equals <i>one and three-fourths</i> .
UPPERCASE	Words in uppercase indicate a command.
<i>n</i>	A lowercase italic <i>n</i> indicates the generic use of a number. For example, <i>19nn</i> indicates a 4-digit number in which the last 2 digits are unknown.
<b>Note</b>	A note contains information of special importance to the reader.
<b>Caution</b>	A caution contains information to prevent damage to the equipment.
<b>Warning</b>	A warning contains information to prevent personal injury.

# 1

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## MicroVAX 3100 Model 90 Hardware

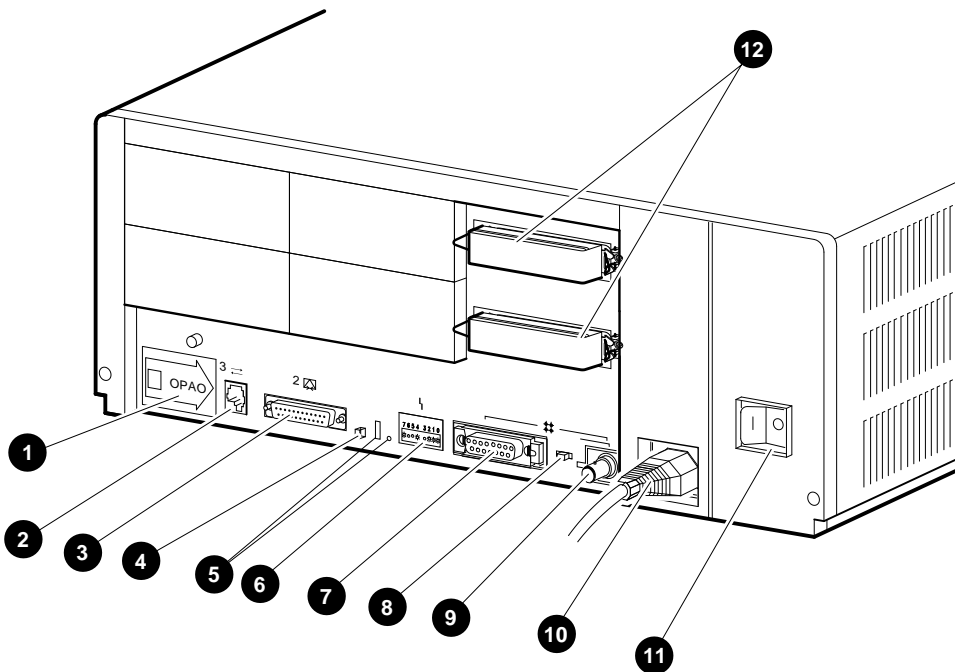
This chapter describes the MicroVAX 3100 Model 90 system unit. It describes the following:

- The Model 90 system unit
- Terminal settings
- System unit icons

### 1.1 System Unit Description

Figure 1–1 shows the MicroVAX 3100 Model 90 ports, controls, and LEDs.

Figure 1-1 MicroVAX 3100 Model 90 Ports, Controls, and LEDs



MLO-012036

- ❶ Peel-off label covering Modified Modular Jack (MMJ) Ports 0 and 1. These are the ports to which you can connect a user terminal, printer or other device that uses asynchronous DEC423 data-line-only ports.
- ❷ MMJ port 3; the only console port.
- ❸ Asynchronous Modem Control Port (Port 2)—This is the port at which you can connect a modem, terminal, printer, or other devices that use EIA-232 ports to the system unit.
- ❹ Halt Button—This button halts the operating system and returns the system to console mode.

- ⑤ **Break/Enable Switch and LED**—When the break/enable switch is in the up position, you can halt the system by pressing the break key on the console terminal keyboard. When the break/enable switch is in the down position, you must use the halt button to halt the system.

The LED indicates the position of the switch as follows:

On when the break/enable switch is in the up position.

Off when the break/enable switch is in the down position.

- ⑥ **Diagnostic LEDs**—The diagnostic LEDs (status LED display) indicate system and test status, and error conditions.
- ⑦ **Standard Ethernet Port**—This is the port to which standard Ethernet connects to the system unit.
- ⑧ **Network Select Switch**—This switch selects either ThinWire™ or standard Ethernet connection.  
  
The system uses standard Ethernet when the network select switch is in the left position. The system uses ThinWire Ethernet when the network select switch is in the right position.
- ⑨ **ThinWire Ethernet Port**—This is the port to which ThinWire Ethernet connects to the system unit.
- ⑩ **System ac Power Cable and Port**—This is the port through which ac power from the power source reaches the system unit.
- ⑪ **On/Off Switch**—This switch turns the system unit on or off. To turn the system on, set the on/off switch to the on ( | ) position. To turn the system off, set the on/off switch to the off ( O ) position.
- ⑫ **SCSI Ports**—These are the ports to which external small computer system interface (SCSI) storage devices connect to the system unit. A SCSI terminator is installed in these ports during shipment. A single SCSI port is standard in the MicroVAX 3100 Model 90 system, the second (upper) port is optional.

## 1.2 Terminal Settings

Terminals must have the following settings to communicate with the system unit. See the terminal documentation for more information on setting up the terminal.

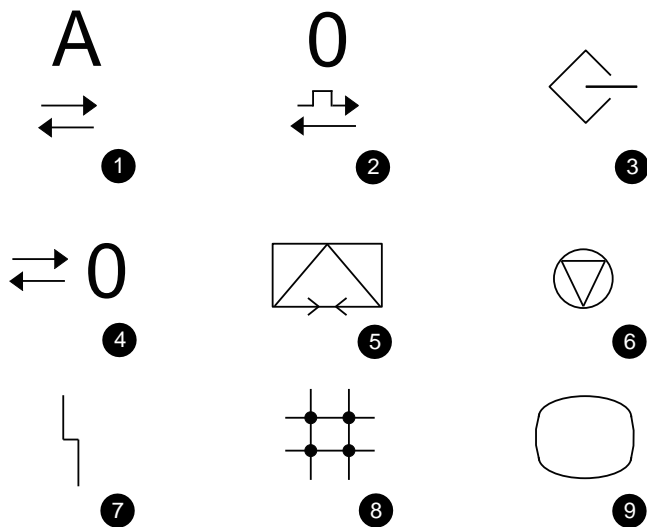
**Table 1-1 Terminal Settings**

Feature	Setting
Terminal	<i>VTnnn</i>
Transmit speed	9600 baud
Receive speed	receive = transmit
Character format	8 bits, no parity
Stop bits	1
Comm1 port	DEC-423 (data-leads-only)

### 1.3 System Unit Icons

Figure 1-2 shows the icons used on the system unit. A description of each icon follows the figure.

**Figure 1-2 System Unit Icons**



GA\_EN00191A\_92A

- ❶ This icon indicates optional asynchronous communications port A. A similar icon indicates the optional asynchronous communications port B.
- ❷ This icon indicates optional synchronous communications port 0. A similar icon indicates the optional asynchronous communications port 1.
- ❸ This icon identifies the SCSI port.
- ❹ This icon identifies a DEC423 MMJ port 0. Similar icons indicate MMJ ports 1 and 3.
- ❺ This icon identifies the asynchronous modem control port (port 2).
- ❻ This icon identifies the halt button.
- ❼ This icon identifies the status LED display.
- ❽ This icon identifies the standard Ethernet port, the network select switch, and the ThinWire Ethernet port.
- ❾ This icon identifies controls and terminals intended for mainly monochrome video signals.





# 2

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## Internal System Devices

This chapter describes how to access and operate the internal devices that are options of the system. The system can contain the following optional devices:

- KZDDA adapter for second SCSI bus
- RRD42 compact disc drive
- RX26 diskette drive
- RZ-series hard disk drives
- TLZ06 cassette tape drive
- TZ30 tape drive
- TZK10/11 quarter-inch cartridge (QIC) tape drive

This chapter also gives information on the following:

- Accessing removable media devices
- Cleaning device drive heads
- System disk
- SCSI drive utilities

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### Note

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Appendix B contains information on the care and handling of the media types for each of the removable media devices. It also gives information on setting the write-protect switches on the diskettes and tapes.

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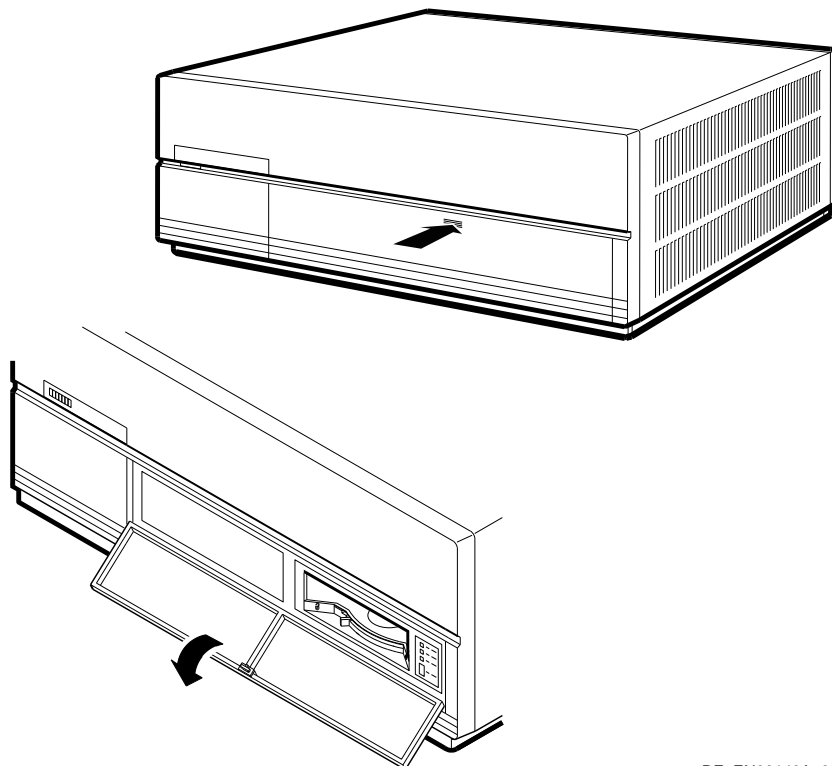
## 2.1 Accessing the Removable Media System Devices

To access the system devices, follow these steps:

1. Position the system unit so that the front of it is facing you.
2. Open the cover by pushing it and then releasing it (Figure 2–1).

Close the cover when you are not using the system devices.

Figure 2–1 Opening Media Access Cover



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## 2.2 KZDDA Adapter

The KZDDA adapter is an option that allows you to add a second SCSI bus to the system. It provides support for seven mass storage devices that are installed in an expansion box. Chapter 4 contains information about connecting an expansion box to the system.

## 2.3 RRD42 Compact Disc Drive

The RRD42 compact disc drive is a read-only device that can read information from 600 Mbyte compact discs. The compact disc fits into a supplied caddy, which you insert into the drive.

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**Note**

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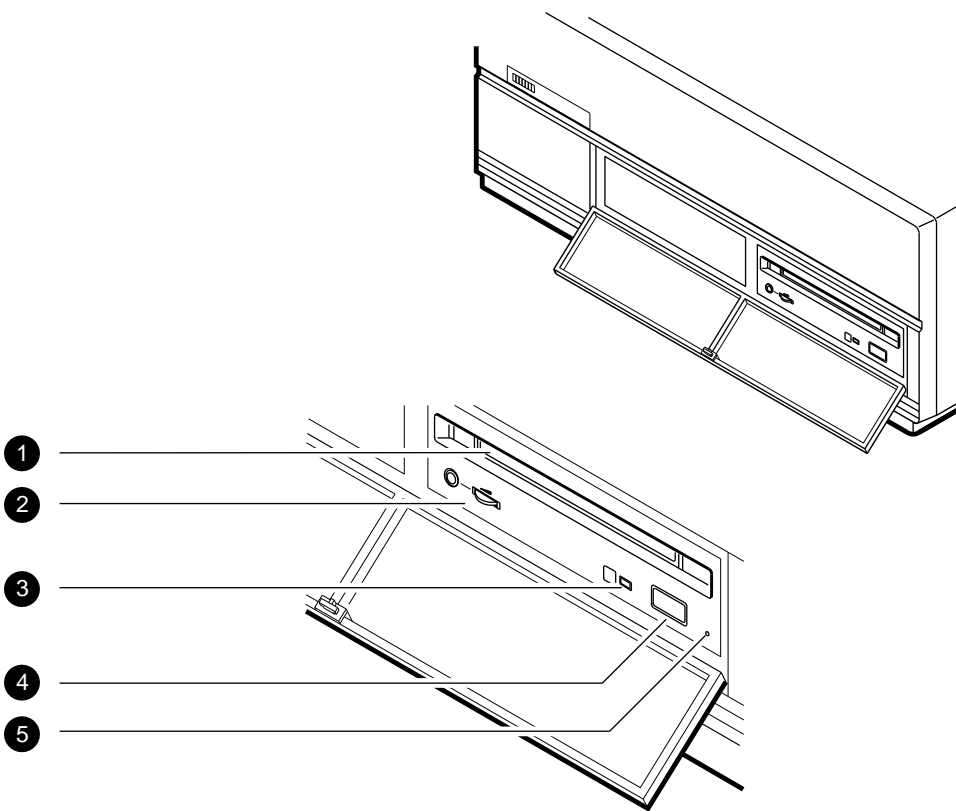
You can order additional caddies from your Digital™ Sales representative. The part number is 30-34512-01.

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### 2.3.1 RRD42 Controls and LEDs

The front panel of the RRD42 compact disc drive has a disc slot, an eject button, a busy LED, and an emergency eject hole. Figure 2-2 shows the front panel of the RRD42 compact disc drive.

**Figure 2–2 RRD42 Compact Disc Drive Front Panel**



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- ❶ Disc Slot.
- ❷ Volume Control and Headphone Socket—Not used.
- ❸ Busy LED—This LED turns on when data is read from the disc. It flashes during seek operations.
- ❹ Eject Button—Press this button to eject the caddy from the RRD42.
- ❺ Emergency Eject Hole—Use the emergency eject hole to manually eject the caddy if a power failure occurs (see Section 2.3.3).

### 2.3.2 Inserting a Compact Disc into the RRD42 Compact Disc Drive

Inserting a compact disc involves two stages:

- Loading the compact disc into the caddy
- Inserting the caddy into the RRD42

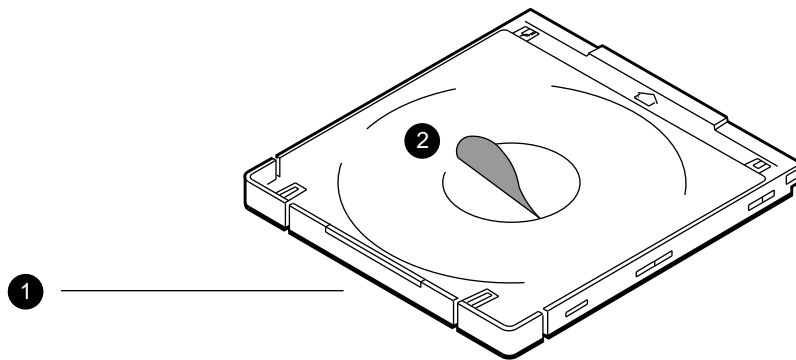
These stages are described in the following subsections.

#### Loading the Compact Disc into the Caddy

To load the compact disc into the caddy, follow these steps:

1. If there is a protective film on the center of the caddy lid (Figure 2–3), remove it before using the caddy.

**Figure 2–3 Removing Protective Film**

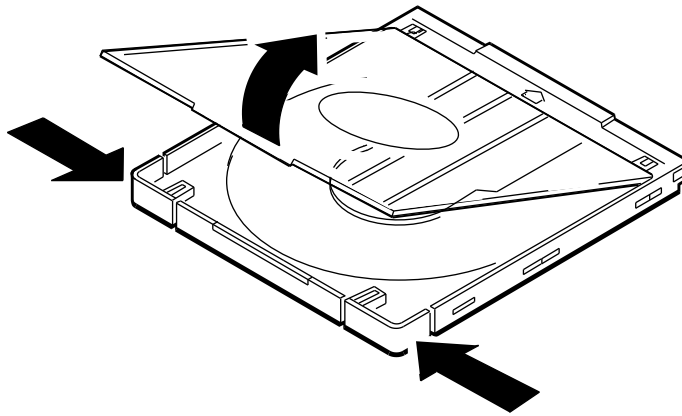


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- ❶ Disc Caddy
- ❷ Protective Film

2. Open the lid of the caddy by pressing the tabs on both sides of the caddy (Figure 2-4). These tabs are marked with an arrowhead and the word *open*.

**Figure 2-4** Opening Caddy



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3. Place the compact disc in the caddy (Figure 2-5). The disc label must face upwards.
4. Close the lid of the caddy firmly.

**Figure 2-5 Placing the Compact Disc in the Caddy**



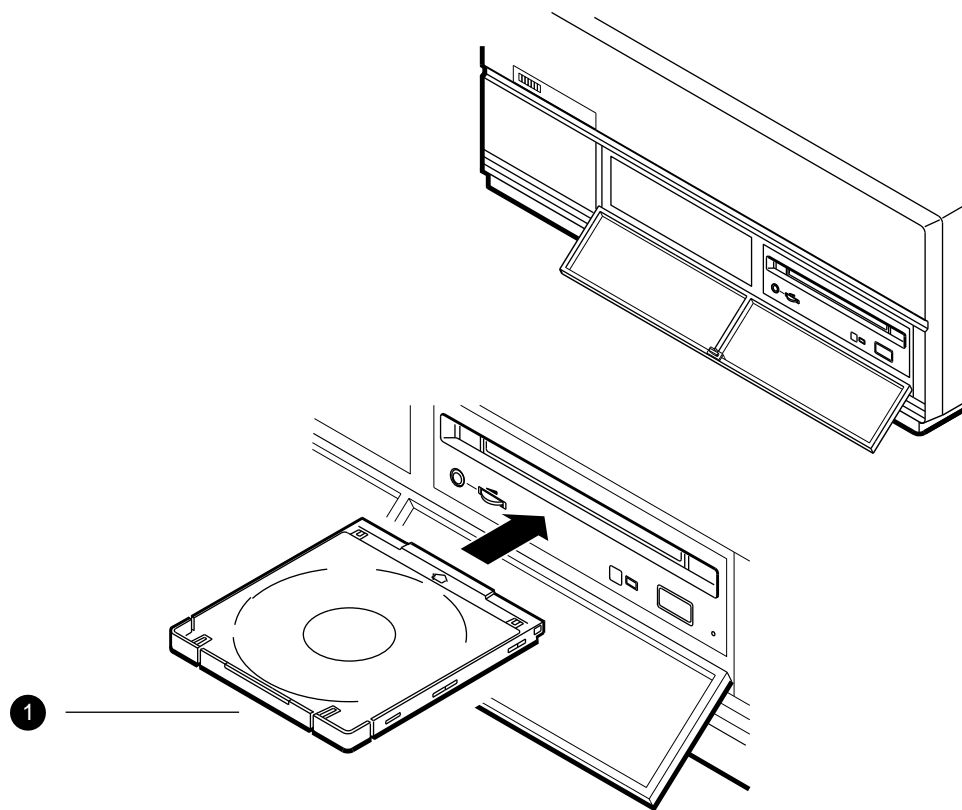
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### Inserting the Caddy into the RRD42

Insert the caddy into the slot on the front of the RRD42 with the disc label facing upwards (Figure 2-6). Push the caddy until it is completely inserted in the drive.

The RRD42 ejects the compact disc if the disc is upside-down, not properly inserted in the caddy, or if other conditions prevent it from reading the disc.

Figure 2-6 Inserting the Caddy into the RRD42 Drive



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1 Disc and Disc Caddy



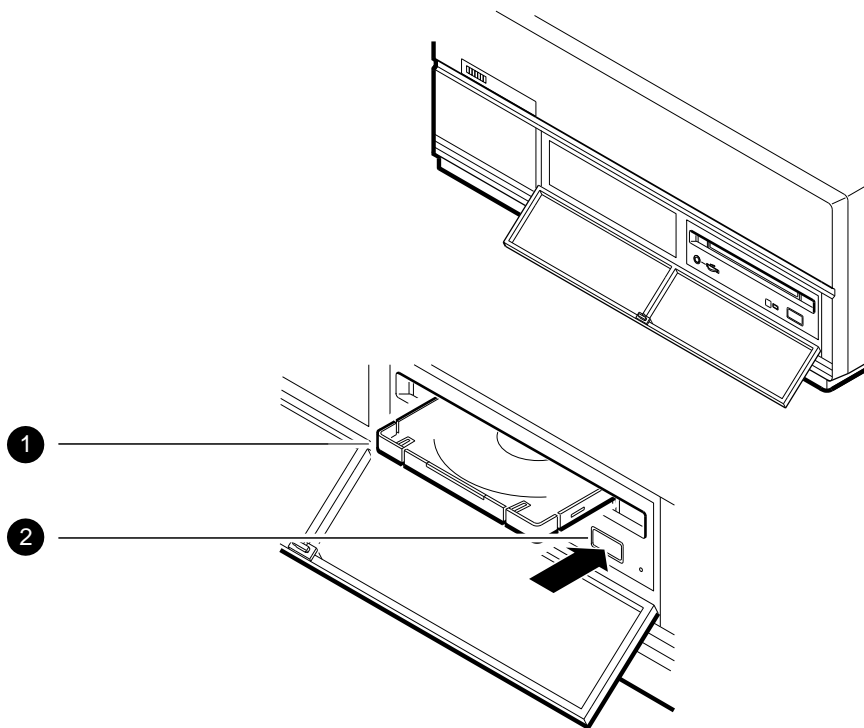
The busy LED then stays on for a few seconds. When the busy LED goes off, the RRD42 can receive commands and you can read data from the compact disc.

### 2.3.3 Removing the Caddy from the RRD42

Press the eject button on the front of the RRD42 to remove the caddy (Figure 2-7).

If the eject button is disabled by software, you must manually remove the caddy as described in the next section.

Figure 2-7 Removing the Caddy



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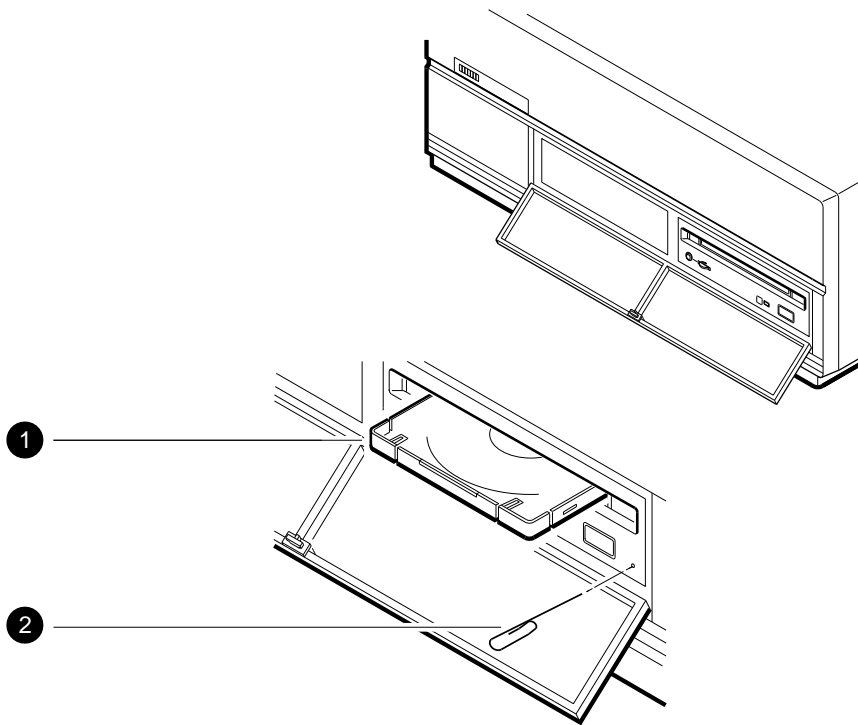
- ❶ Disc and Disc Caddy
- ❷ Eject Button

### **Removing a Caddy Manually**

To remove a caddy manually from the RRD42, follow these steps:

1. Shut down the operating system using the procedure outlined in the operating system documentation.
2. Set the on/off switch on the system unit to the off (O) position.
3. Insert a straightened large paper clip or metal rod, 1.2 millimeters (mm) in diameter and not less than 35 mm long, into the emergency eject hole and push the clip or rod in until the caddy rises in the slot (Figure 2-8).
4. Push the clip or rod hard until the caddy emerges from the slot.

**Figure 2-8 Manually Removing the Caddy**



RE\_EN06161A\_91

- ❶ Disc and Disc Caddy.
- ❷ Inserting the paper clip into the emergency eject hole.

## 2.4 RX26 Diskette Drive

The RX26 diskette drive allows you to read information from and write information to 3.5-inch removable diskettes. You can use high-density (HD) or extra-density (ED) diskettes.

The RX26 diskette drive can read from and write data to HD diskettes that have been formatted by an RX23 diskette drive. However, the ED diskettes used by the RX26 diskette drive cannot be used by the RX23 diskette drive. Appendix B contains information about both types of diskette.

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### Caution

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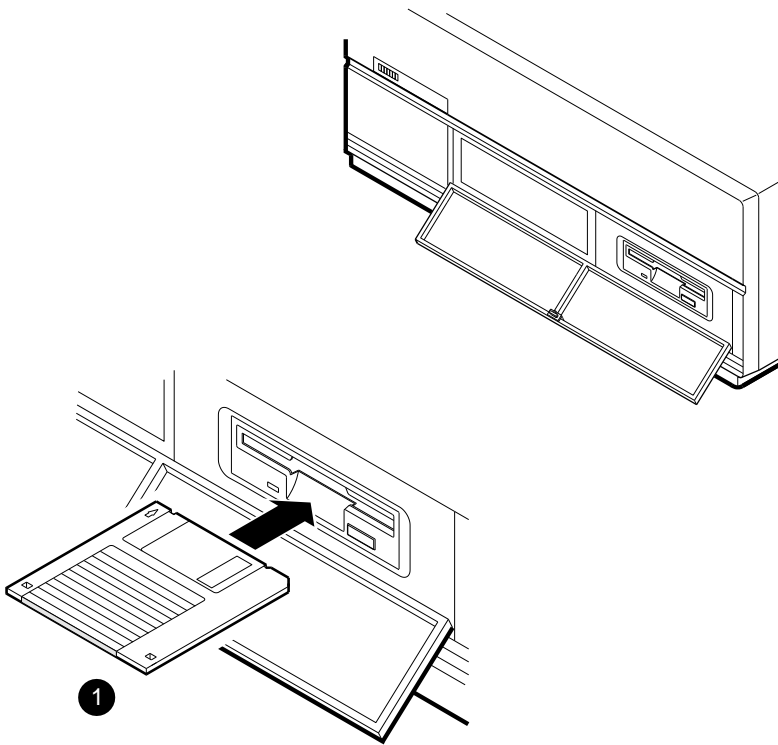
Never remove a diskette while the diskette drive is performing a function. When the diskette drive is performing a function, the activity LED either stays on or flashes, depending on the function.

---

### 2.4.1 Inserting a Diskette

To insert a diskette into the RX26 diskette drive, slide the diskette into the drive (see Figure 2-9). The diskette slides in and drops down to its load position.

**Figure 2-9 Inserting a Diskette**



**1** Diskette

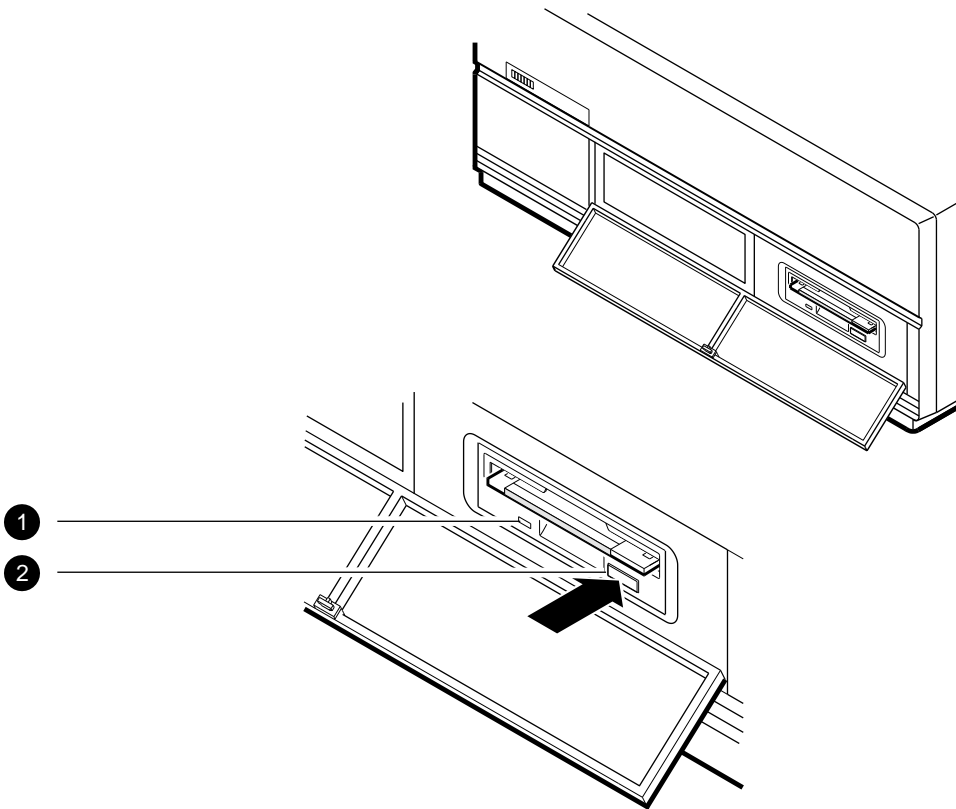
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## 2.4.2 Removing a Diskette

You must dismount the diskette drive before removing a diskette. For information on dismounting a diskette, see the software documentation.

To remove a diskette from the diskette drive, press the eject button on the front of the diskette drive (Figure 2–10). Remove the diskette when it extends slightly from the diskette slot.

Figure 2–10 Removing a Diskette from an RX26 Drive



RE\_EN06157A\_91

- ❶ Activity LED
- ❷ Eject Button

## 2.5 RZ-Series Disk Drives

The RZ-series disk drives are 3.5-inch high performance devices that store data on thin-film rigid media disks. The storage medium in the disk drive is fixed (not operator removable).

Table 2-1 lists the drives that can be installed in the MicroVAX 3100 Model 90 system.

**Table 2-1 RZ-Series Drives**

Drive	Capacity
RZ23L	121 Mbyte
RZ24	209 Mbyte
RZ24L	245 Mbyte
RZ25	426 Mbyte
RZ25L	535 Mbyte
RZ26	1.05 Gbyte
RZ26L	1.05 Gbyte
RZ28	2.10 Gbyte

See *MicroVAX 3100 Model 90 Customer Technical Information* or *MicroVAX 3100 Platform Options* for more information about the RZ-series disk drives.

## 2.6 TLZ06 Cassette Tape Drive

The TLZ06 cassette tape drive is a streaming tape drive that uses 4 millimeter (mm) tape. You can use it for archival, data storage and retrieval, and data collection purposes. The TLZ06 tape drive design incorporates both digital data storage (DDS) and digital audio tape (DAT) technologies.

### 2.6.1 Cassette Tape

You can use several types of cassette tape with the TLZ06 cassette tape drive. Appendix B lists the types of tape that you can use. It also includes information on the care and handling of these tapes.

### 2.6.2 TLZ06 Controls and LEDs

The TLZ06 cassette tape drive has two LEDs (amber and green) and an unload button. Figure 2-11 shows the positions of the LEDs and the unload button. The unload button ejects the cassette tape from the TLZ06 cassette tape drive. Table 2-2 lists the functions of the LEDs.

**Table 2-2 TLZ06 LED Functions**

Status	Write-protect LED	Tape/activity LED
No tape loaded	Off	Off
Tape loaded and write enabled	Off	On
Tape loaded and write protected	On	On
No drive activity	Signals the cassette's write-protect status	On
Drive activity	Signals the cassette's write-protect status	Blinks
Loading a tape	Off at first, then signals the cassette's write-protect status	Flashes dimly, then stays on
Unloading a tape	Signals the cassette's write-protect status, then goes off	Flashes dimly, then goes off. It then signals the drive activity.

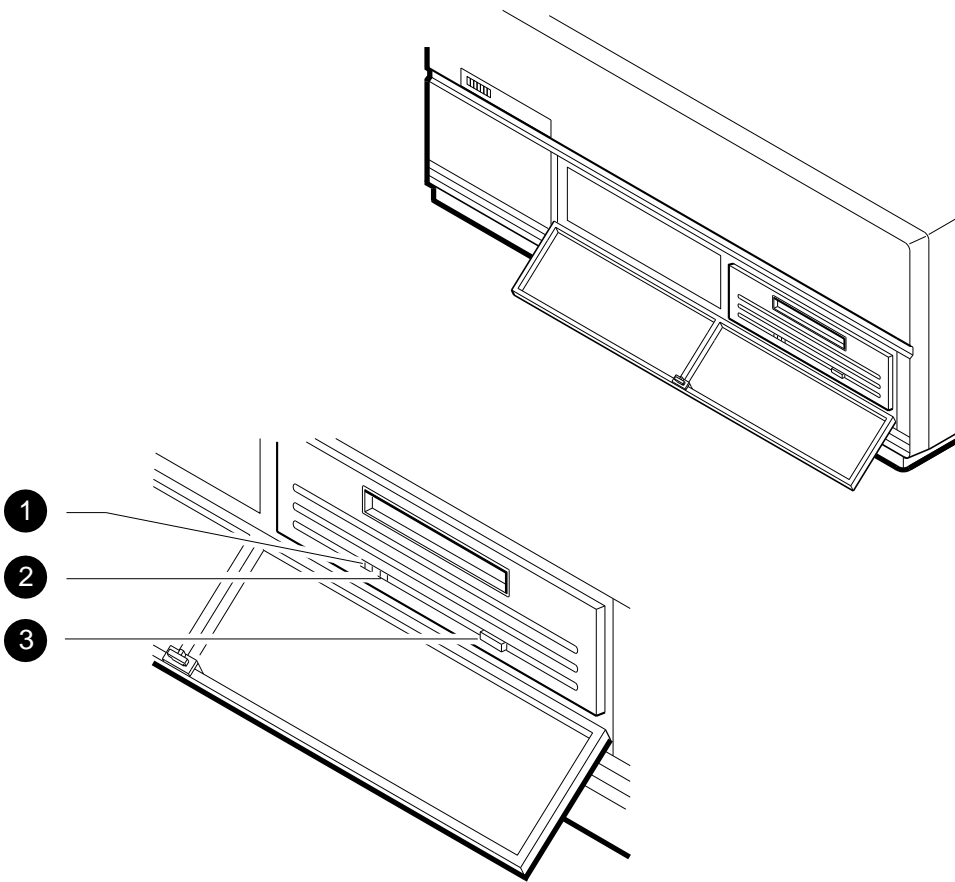
(continued on next page)



**Table 2–2 (Cont.) TLZ06 LED Functions**

<b>Status</b>	<b>Write-protect LED</b>	<b>Tape/activity LED</b>
Reset sequence	Flashes synchronously with the tape/activity LED, then signals the cassette's write-protect status	Flashes synchronously with the write-protect LED, then signals the drive activity
Power-up tests and self-tests	Flashes, then signals the cassette's write-protect status	Flashes, then signals the drive activity
Extended self-tests	Signals the cassette's write-protect status	Flashes (1 to 4 minutes), then signals the drive activity
Test failures	Flashes	Flashes

**Figure 2–11 TLZ06 Unload Button and LEDs**



- ❶ Write-Protect LED
- ❷ Tape/Activity LED
- ❸ Unload Button

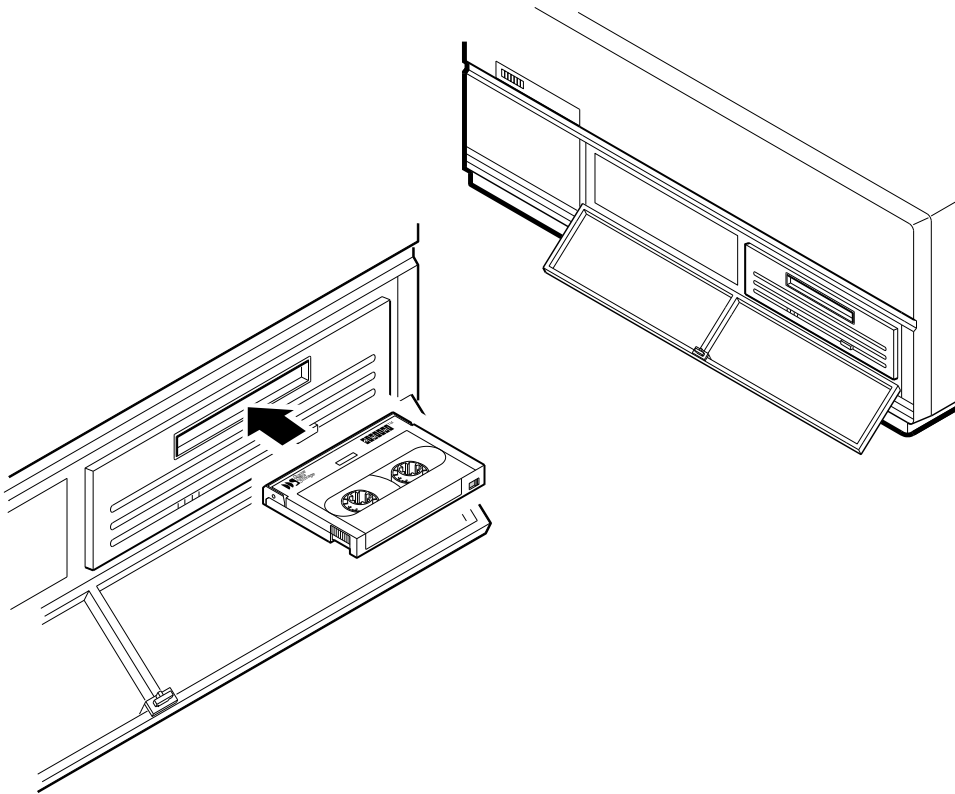
GA\_EN00119A\_92A

### 2.6.3 Inserting a Cassette Tape into the TLZ06

To insert a cassette tape into the TLZ06, slide the tape in until the TLZ06 draws the tape inside. Figure 2-12 shows the correct orientation of the tape as you insert it.

When you insert the tape correctly, the tape/activity LED flashes dimly and then stays on. You can now send operating system commands to the TLZ06 cassette tape drive. If both LEDs continue to flash, see the *MicroVAX 3100 Model 90 Troubleshooting and Diagnostic Information* manual.

**Figure 2-12 Inserting a cassette tape into the TLZ06 Tape Drive**



GA\_EN00120A\_92A

## 2.6.4 Removing a Cassette Tape from the TLZ06

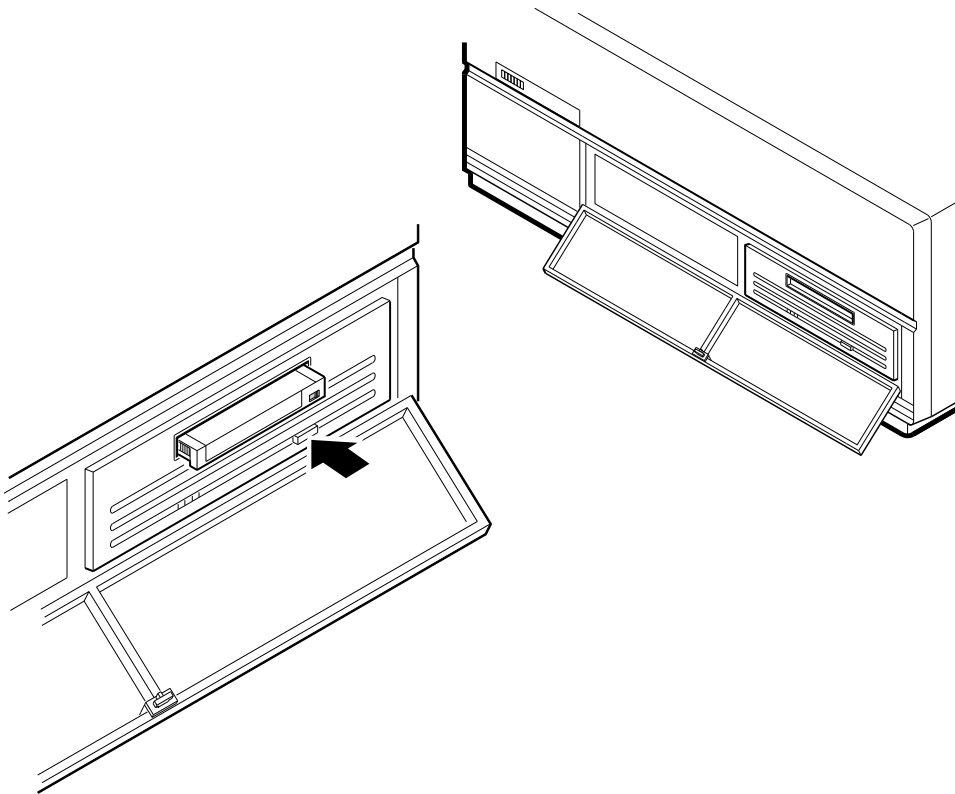
To remove a cassette tape from the TLZ06, follow these steps:

1. Dismount the cassette tape by entering the commands from the operating system.

Before you go to step 2, wait until the tape/activity LED stops flashing and stays on.

2. Press the eject button (see Figure 2-13).
3. Remove the cassette tape.

**Figure 2-13 Removing a Cassette Tape from the TLZ06 Tape Drive**



GA\_EN00121A\_92A

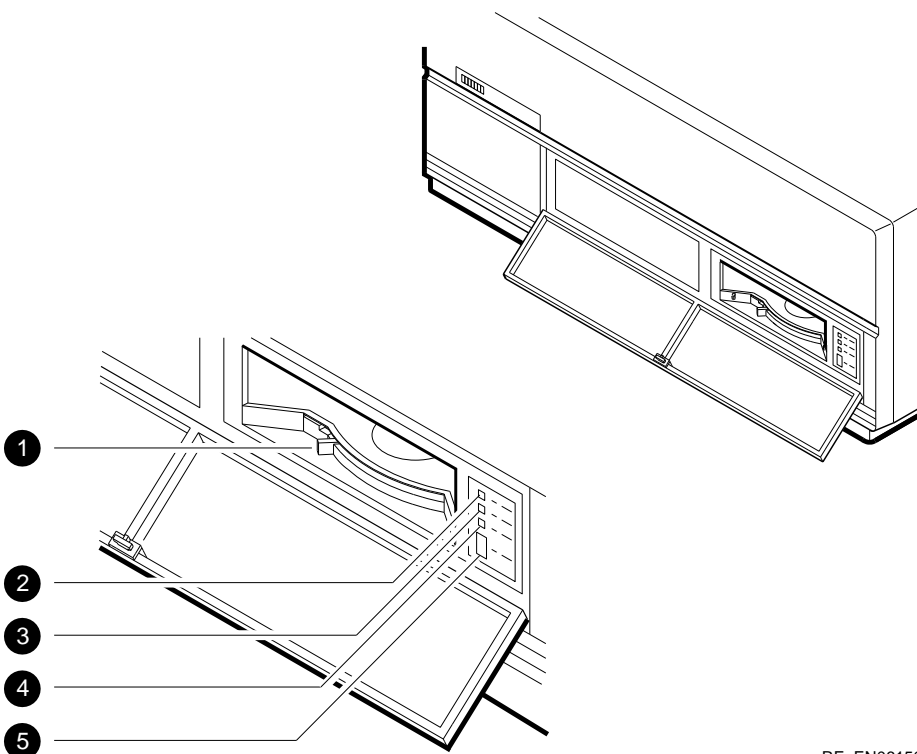
## 2.7 TZ30 Tape Drive

The TZ30 uses CompacTape™ or CompacTape II cartridges that contain magnetic tape on a single reel. When you insert the tape cartridge into the drive and load it, the tape is automatically threaded onto a take-up reel inside the drive.

### 2.7.1 TZ30 Controls and LEDs

Figure 2-14 shows the location of the controls and LEDs on the TZ30 tape drive. Table 2-3 explains the functions of the TZ30 controls. Table 2-4 explains the functions of the TZ30 LEDs and beeper.

**Figure 2–14 TZ30 Tape Drive Controls and LEDs**



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- ❶ Operate Lever
- ❷ Write-Protect LED (Red)
- ❸ Tape-in-Use LED (Yellow)
- ❹ Operate-Lever LED (Green)
- ❺ Unload Button



**Table 2–3 TZ30 Controls**

Control	Function
Unload button	The unload button rewinds and disengages the tape from the take-up reel inside the TZ30. The tape must be completely rewound and unloaded into the tape cartridge before you can remove the tape cartridge from the drive. The tape is fully unloaded when the operate lever LED is on.
Operate lever <sup>1</sup>	Use the operate lever to lock or unlock a tape cartridge. To insert a tape cartridge, the operate lever must be in the unlock position. Once you insert a tape cartridge and the green LED is on, move the operate lever to the lock position. To eject the tape cartridge from the drive, (only when the green LED is on or flashing, and after the beeper sounds momentarily), move the operate lever to the unlock position.

<sup>1</sup>When using the operate lever, slide it completely to the lock or unlock position before beginning the next operation.

**Table 2–4 TZ30 LEDs**

LED	State	Condition
Operate-lever LED	On	Safe to use the operate lever.
	Off	Do not use the operate lever.
	Flashing	The drive has detected a tape cartridge or calibration error.
Tape-in-use LED	Flashing	Tape in use.
	On	Tape loaded and ready to use.
Write-protect LED	On	Tape is write-protected.
	Off	Tape is write-enabled.
All three LEDs	On	The power-up diagnostic test is in progress.
All three LEDs	Flashing	Drive fault.
Beeper	One beep	The TZ30 beeps once when you turn on the system unit.
	Two beeps	Indicate that the tape is unloaded and you can remove it from the drive.

## 2.7.2 Inserting and Using a Tape Cartridge

To insert a tape cartridge, follow these steps:

1. Slide the operate lever to the unlock position.
2. Insert the tape cartridge following these rules:
  - If you insert the tape cartridge more than half-way into the drive, you must insert the tape cartridge fully.
  - If you want to use another tape cartridge, insert the tape cartridge fully, unload the tape cartridge, and then remove it.
  - If you cannot insert the tape cartridge into the TZ30, move the operate lever to the lock position. Then move the operate lever to the unlock position and reinsert the tape cartridge.
  - Do not push the tape cartridge into the TZ30 while moving the operate lever between the lock and unlock positions. If you do so, the TZ30 interprets this action as an insertion of the tape cartridge.

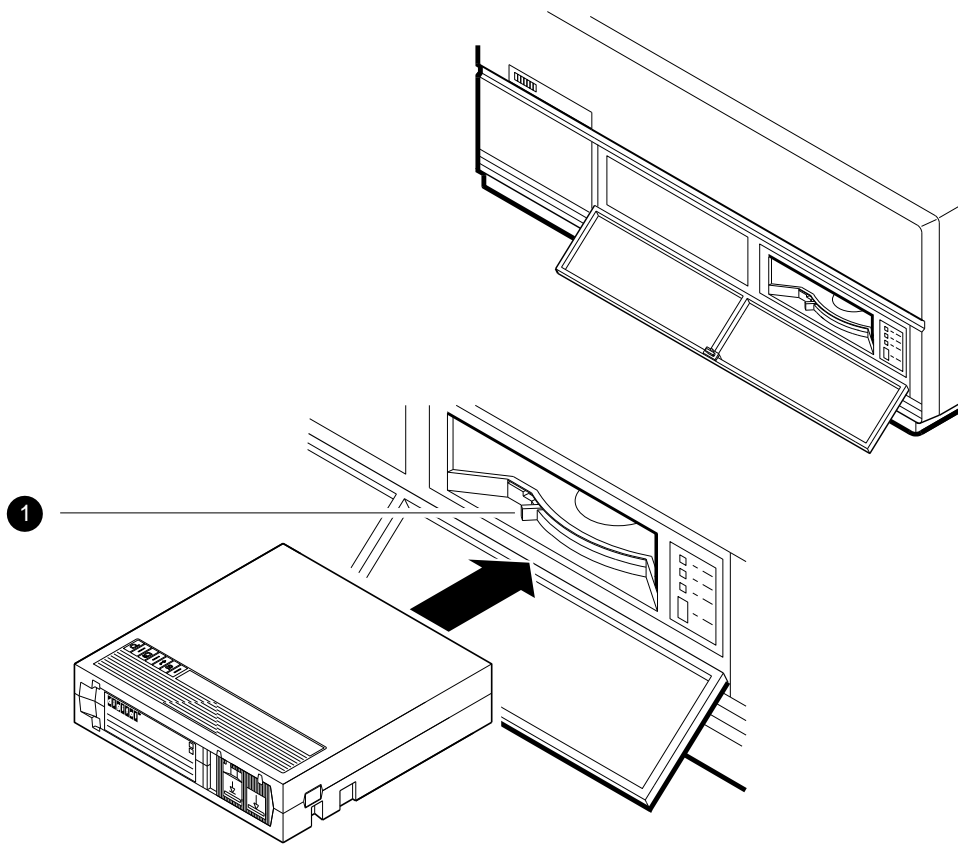
The green LED turns on.

3. Move the operate lever to the lock position to lock the tape cartridge in the drive.

The green LED turns off, and the yellow LED starts to flash, indicating that the tape is loading. When you load the tape and it is ready for use, the yellow LED stays on. When the yellow LED stays on and the green LED stays off, the tape is ready to use.

See the *MicroVAX 3100 Model 90 Troubleshooting and Diagnostic Information* manual if errors occur while you are using the TZ30 tape drive.

**Figure 2-15 Inserting a Tape Cartridge**



RE\_EN06151A\_91

- 1** Operate Lever

### 2.7.3 Removing a Tape Cartridge from the Drive

To remove a tape cartridge, follow these steps:

---

**Caution**

---

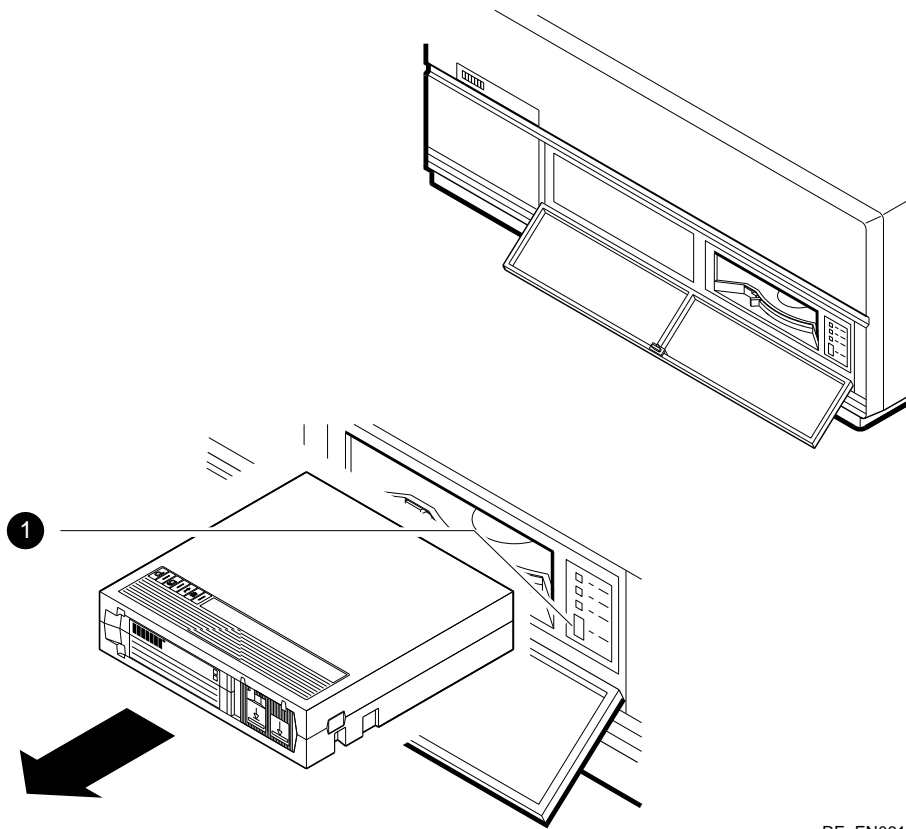
- The tape must fully rewind before you can remove the tape cartridge from the tape drive.
  - Remove the tape cartridge from the drive before setting the on/off switch on the system unit to the off (O) position.
- 

1. Press the unload button (see Figure 2–16) or enter the appropriate system software command.

The yellow LED flashes as the tape rewinds. Once the tape rewinds completely, the beeper sounds twice and the green LED turns on.

2. Move the operate lever to the unlock position.
3. Remove the tape cartridge from the tape drive after it ejects.

**Figure 2–16 Removing a Tape Cartridge**



**1 Unload Button**

RE\_EN06152A\_91

## 2.8 TZK10/11 QIC Tape Drive

The TZK10 and TZK11 QIC tape drives are a quarter-inch cartridge, streaming tape drives. They can be used for archival, data storage and retrieval, and data collection purposes.

### 2.8.1 TZK10/11 Controls and LEDs

The TZK10/11 QIC tape drive has one dual-color LED (green and amber) and an eject button. Figure 2-17 shows the positions of the LED and the eject button. Table 2-5 lists the functions of the LED and the eject button.

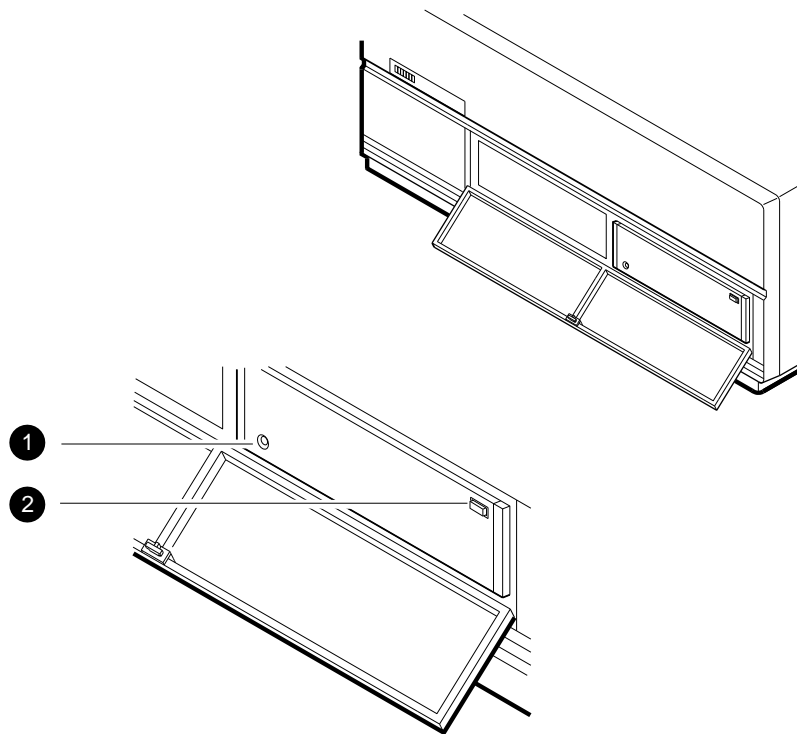
**Table 2-5 TZK10/11 Eject Button and LED Functions**

Item	State	Function
Eject button		Unlocks the door and partially ejects the QIC tape from the drive.
LED	Off	Tape is not present or the tape is present, but it has been dismounted by the software.
	Stays green	Tape is loaded.
	Flashes green	Tape is in motion.
	Stays amber	A fault has occurred.

### 2.8.2 QIC Tape

You can use several types of QIC tape with the TZK10/11 QIC tape drive. Appendix B lists the types of tape that you can use. It also includes information on the care and handling of these tapes.

Figure 2-17 TZK10/11 Eject Button and LED



RE\_EN06153A\_91

- ❶ Dual-Color LED
- ❷ Eject Button

### 2.8.3 Inserting a QIC Tape into the TZK10/11

To insert a QIC tape into the TZK10/11 drive, follow these steps:

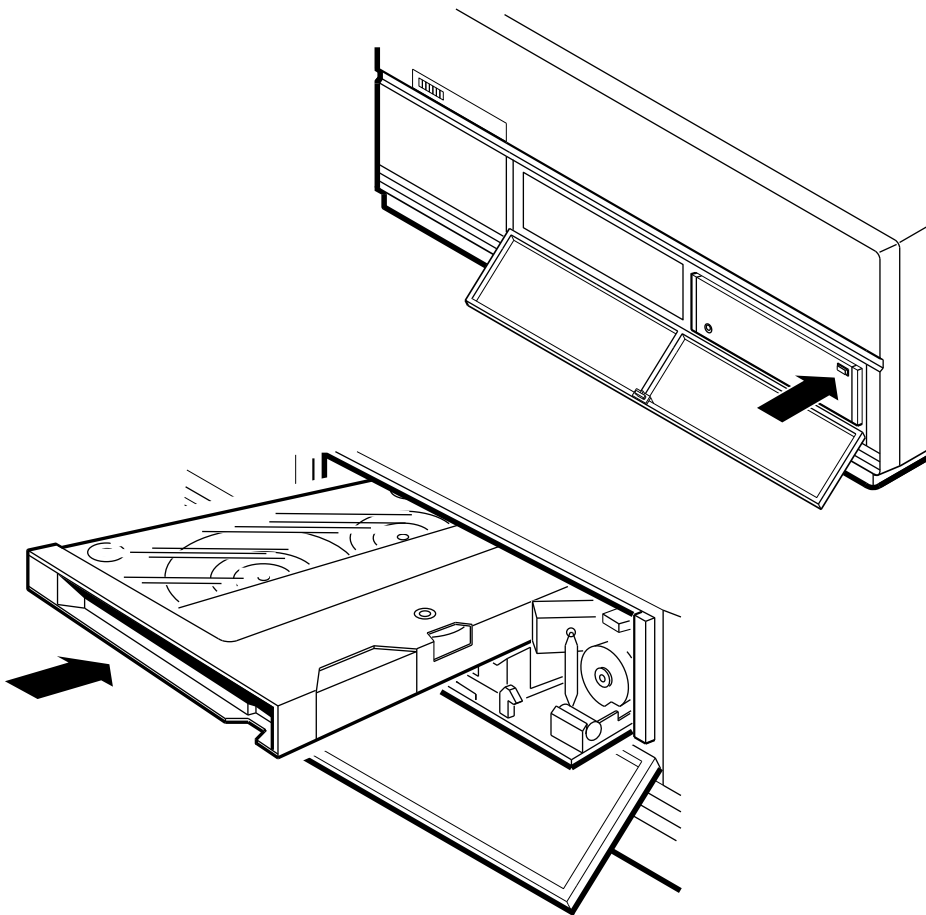
1. Press the eject button to open the door on the front of the TZK10/11 (see Figure 2-18). The door partially opens.
2. Open the door fully.
3. Insert the QIC tape into the TZK10/11. Figure 2-18 shows the correct orientation of the tape as you insert it. Slide the tape in until you feel resistance.
4. Close the door.

When you insert the tape correctly, the LED turns green, then flashes green while the TZK10/11 makes several whirring sounds. When the sounds stop, the LED stays green. Operating system commands can now be sent to the TZK10/11 QIC tape drive.

If the LED turns amber, see the *MicroVAX 3100 Model 90 Troubleshooting and Diagnostic Information* manual.



**Figure 2-18** Inserting a QIC Tape



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## 2.8.4 Removing a QIC Tape from the TZK10/11

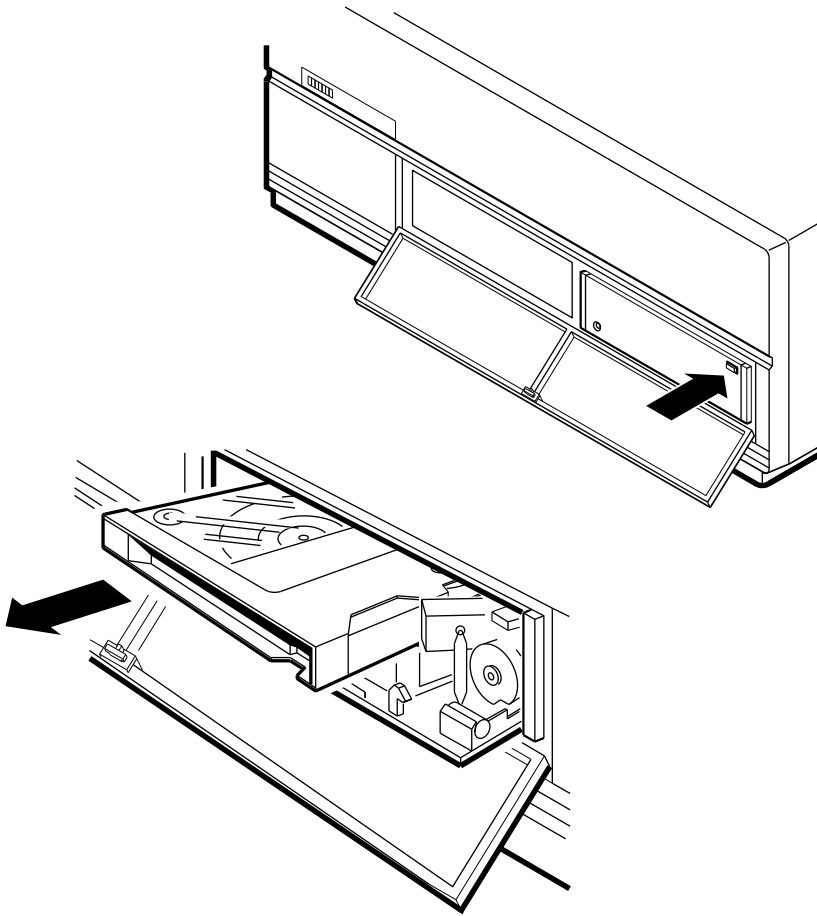
To remove a QIC tape from the TZK10/11, follow these steps:

1. Dismount the QIC tape from the operating system.

Before you go to step 2, wait until the tape stops moving (the TZK10/11 stops whirring) and the LED stops flashing green and stays green.

2. Press the eject button (see Figure 2-19).
3. Open the door fully and remove the tape.
4. Close the door.

**Figure 2–19 Removing a QIC Tape**



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## 2.9 Cleaning Device Drive Heads

This section describes the cleaning recommendations for the drive heads of the following devices:

- TZ30 tape drive
- TZK10 QIC tape drive
- TLZ06 cassette tape drive
- RX26 diskette drive

The heads are the components of the drives that read data from and write data to the media. Digital recommends that, when cleaning the heads, you use the following Digital-supplied cleaning kits:

- TZ30—Use the TKXX-HC head cleaning kit.
- TZK10/11—Use the TZK1X-HA head cleaning kit.
- TLZ06—Use the TLZ04-HA head cleaning kit.
- RX26—Use the RXA3K-HC head cleaning kit.

To clean the heads, follow the instructions supplied with the cleaning kit.

Digital recommends that you clean the heads of the RX26, TZ30 and TZK10/11 drives after approximately 8 hours of use. Digital recommends that you clean the heads of the TLZ06 drive every 2 weeks, or after 50 hours of use. You should also clean the drive heads if you encounter problems reading or writing data. The following factors affect the cleaning interval:

- Frequency of use
- Quality of the tape
- Quality of the environment

## 2.10 System Disk

The system unit contains at least one hard disk. You cannot physically access the hard disk. This hard disk, called the system disk, holds the factory installed software (FIS). FIS is an OpenVMS™ operating system, which is installed before the system is shipped. However, you can use an operating system stored in a different location if you prefer. See the *OpenVMS Factory Installed Software User Information* document for more information on using OpenVMS FIS.

## 2.11 SCSI Drive Utilities

The MicroVAX 3100 Model 90 firmware provides SCSI drive utilities that you can use to perform the following:

- Write a diagnostic key to a diskette  
This utility is only for the use of Digital Services.
- Write a diagnostic key to a tape  
This utility is only for the use of Digital Services.
- Erase the data contained on a hard disk  
This utility enables you to erase all the data contained on a hard disk. Use this utility with caution because you cannot recover data when you erase it.
- Format a diskette  
This utility enables you to format a diskette from the system console. Usually, you use operating system commands to format a diskette.
- Verify the data contained on a hard disk  
This utility allows you to verify the integrity of the data contained on a hard disk. It does not destroy the data on the hard disk.

### 2.11.1 Using the SCSI Drive Utilities

You can use the same procedure to run all the utilities. This section uses the disk erase utility as an example. To run a SCSI drive utility, follow these steps:

1. Enter either of the following commands to display the SCSI Drive Utilities menu:

```
>>> TEST E1          ! For SCSI port A
      or
>>> TEST F1          ! For SCSI port B
```

The system displays the following menu:

```
1 - SCSI-flp_key
2 - SCSI-tp_key
3 - SCSI-hd_dsk_eras
4 - SCSI-flp_fmt
5 - SCSI-dsk_vfy
SCSI_util>>>
```

2. Enter the number of the utility that you want to run, as follows:

```
SCSI_util>>> 3
```

Entering the number 3 runs the disk erase utility.

3. Enter the SCSI ID of the device on which you want to run the utility in response to the following prompt:

```
SCSI_id(0-7)>>> 1
```

SCSI ID 1 represents a user disk.

4. Enter the logical unit number of the SCSI bus in response to the following prompt:

```
SCSI_lun(0-7)>>> 0
```

On MicroVAX 3100 Model 90 systems, the logical unit number is always 0. The system displays a message similar to the following when it is working successfully:

```
SCSI HD_DSK_ERAS_UTIL
```

The system prompts you to confirm that the disk is online and that you want to erase the contents of your hard disk. The following question is displayed:

```
DKA100 OK ?
```

5. Enter OK to erase the contents of your hard disk.

When the contents of your hard disk have been erased, a message similar to the following is displayed:

```
#####  
SCSI_bb_repl 0  
SCSI_util_succ  
>>>
```

#### 2.11.1.1 SCSI Drive Utilities Error Messages

If the system displays an error message, follow these steps:

1. If you are running the utility on a removable media device, for example, a diskette or a tape drive, check that the media is loaded correctly into the drive.
2. Repeat the procedure in Section 2.11.1 to run a SCSI drive utility making sure that you are using the correct SCSI ID and logical unit number.
3. If the utility continues to fail, see the *MicroVAX 3100 Model 90 Troubleshooting and Diagnostic Information* manual.





# 3

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## Network Information

This chapter describes how to connect the system unit to a network and how to disconnect it from a network. It includes information on the following:

- Selecting the Ethernet type
- Connecting the system unit to a ThinWire Ethernet network
- Connecting the system unit to a standard Ethernet network
- Connecting the system unit to a DECconnect™ faceplate
- Testing the Ethernet installation
- Completing the Ethernet installation
- Removing the system unit from a network

This chapter may contain some terms that are unfamiliar to you. These terms are defined in the glossary.

If you have never connected a computer to an Ethernet network, you may need help from a system manager or a network coordinator. If a system manager or network coordinator is not available, contact your Digital Services representative.

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### Caution

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Disconnecting Ethernet cables and terminators from the T-connectors on active Ethernet networks disrupts local network communications.

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## 3.1 Selecting the Ethernet Type

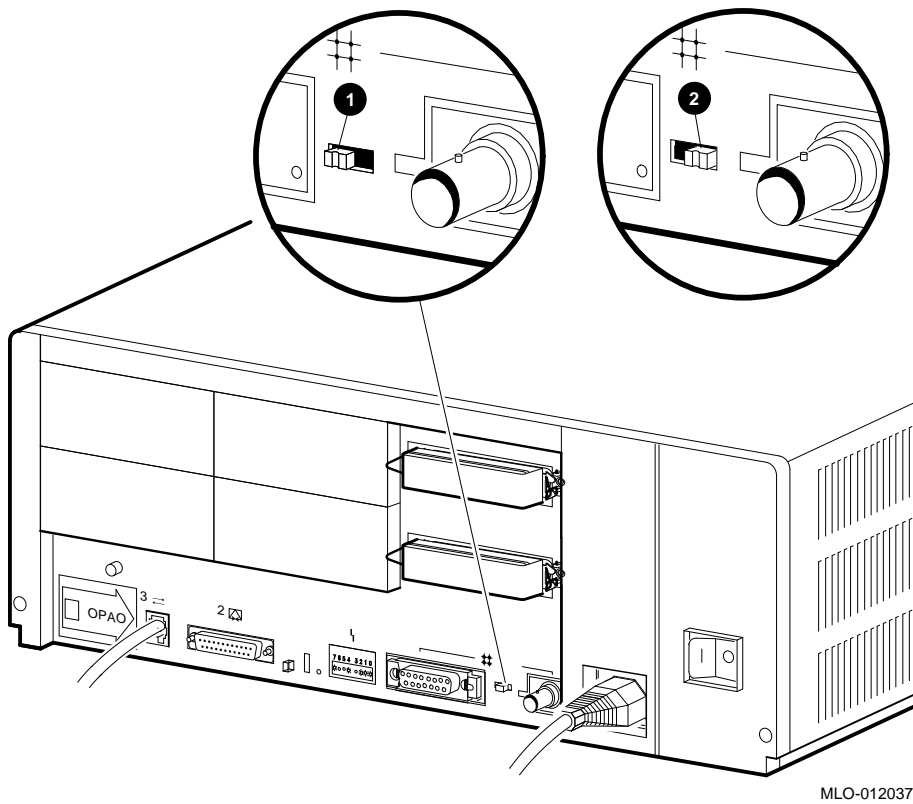
You can connect the system unit to either a ThinWire Ethernet or a standard Ethernet network. Before starting to connect the system unit to the network, ask the network coordinator to tell you which network type to use with the system.

The system unit has a network select switch that you must set depending on which Ethernet type you want to use. When you know which Ethernet type you want to use, set the network select switch as follows:

1. Shut down the operating system using the procedure outlined in the operating system documentation.
2. Set the system unit on/off switch to the off (O) position.
3. Set the network select switch to the correct position:
  - If you are using ThinWire Ethernet, slide the network select switch to the right-hand position (see Figure 3-1).
  - If you are using standard Ethernet, slide the network select switch to the left-hand position (see Figure 3-1).

Go to Section 3.4 if you are connecting the system to a standard Ethernet network.

**Figure 3–1 Network Select Switch Positions**



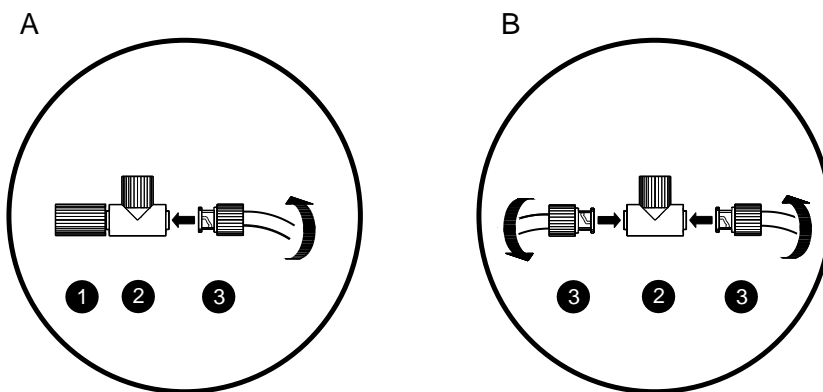
- 1** Standard Ethernet Position
- 2** ThinWire Ethernet Position

## 3.2 Connecting the System Unit to a ThinWire Ethernet Network

To connect the system unit to a ThinWire Ethernet cable, follow these steps:

1. If the ThinWire Ethernet cable is already assembled, remove the ThinWire Ethernet T-connector and terminators from the system and connect the cable (see Figure 3-3). Go to Section 3.5 if you are not connecting the system to a DECconnect faceplate.
2. If the system unit is the first or last system on the ThinWire Ethernet cable, remove one terminator from the T-connector on the back of the system unit. If the system unit is not the first or last system on the ThinWire Ethernet cable, remove both terminators.
3. Attach the ThinWire Ethernet cable to one side of the T-connector if you are connecting the system to the end of the ThinWire Ethernet cable (see Figure 3-2 A). Attach the ThinWire Ethernet cables to both sides of the T-connector if you are connecting the system to the middle of the ThinWire Ethernet cable (Figure 3-2 B).

Figure 3-2 Connecting the ThinWire Ethernet Cable to the T-Connector

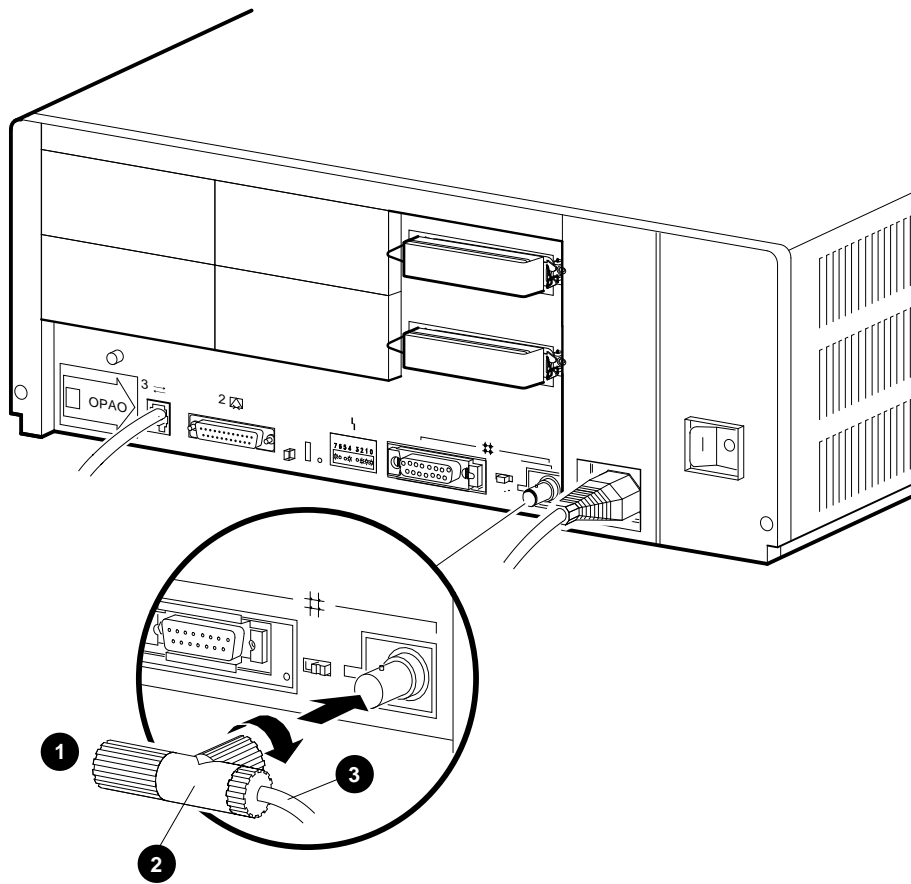


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- ❶ Terminator
- ❷ T-Connector
- ❸ ThinWire Ethernet Cable Connector

Go to Section 3.5 if you are not connecting the system to a DECconnect faceplate.

**Figure 3–3 Connecting the ThinWire Ethernet Cable to the System Unit**



MLO-012038

- ❶ Terminator
- ❷ T-Connector
- ❸ ThinWire Ethernet Cable

### **3.3 Connecting the System Unit to a DECconnect Faceplate**

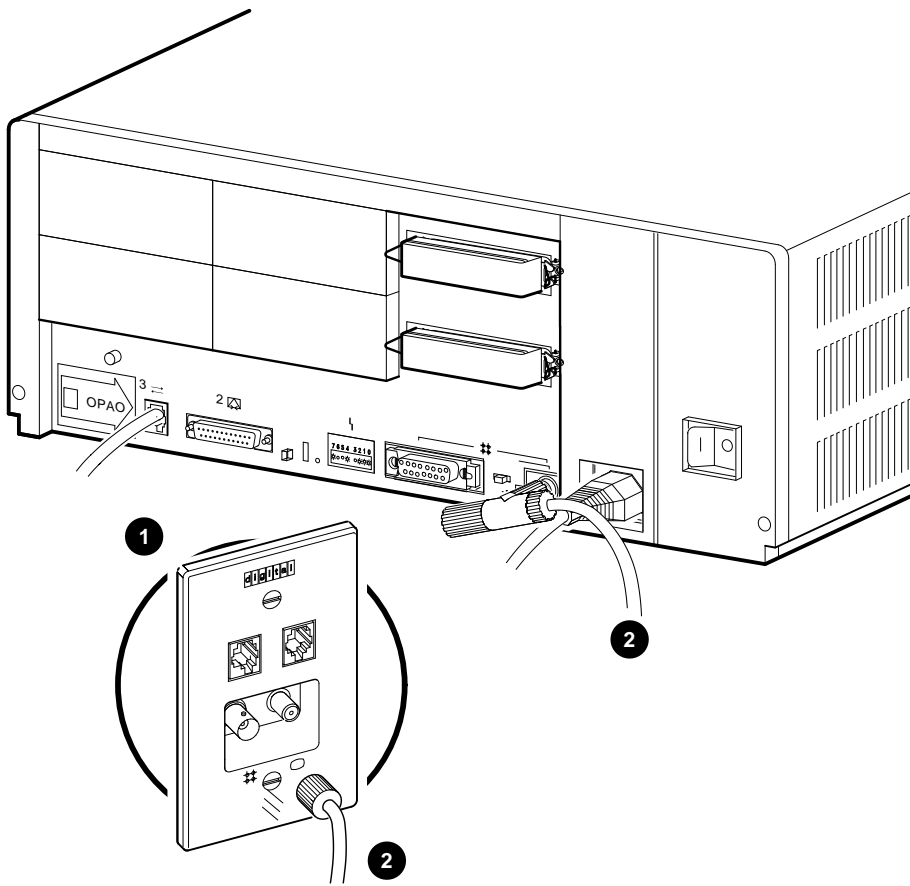
If DECconnect products are installed, a DECconnect faceplate may be on the wall. You can connect VAX™ systems to DECconnect faceplates using different methods. You can connect either a single VAX system or connect several VAX systems in series. Ask the network coordinator for advice on how to connect the system to the DECconnect faceplate.

If you want to connect only one system to the faceplate, follow these steps:

1. Remove the ThinWire Ethernet terminator from one side of the T-connector.
2. Attach the ThinWire Ethernet cable to one side of the T-connector.
3. Attach the other end of the ThinWire Ethernet cable to the DECconnect faceplate.

Go to Section 3.5 for information on how to test the network installation.

**Figure 3-4 Connecting the System Unit to a DECconnect Faceplate**



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- 1** DECconnect Faceplate
- 2** ThinWire Ethernet Cable

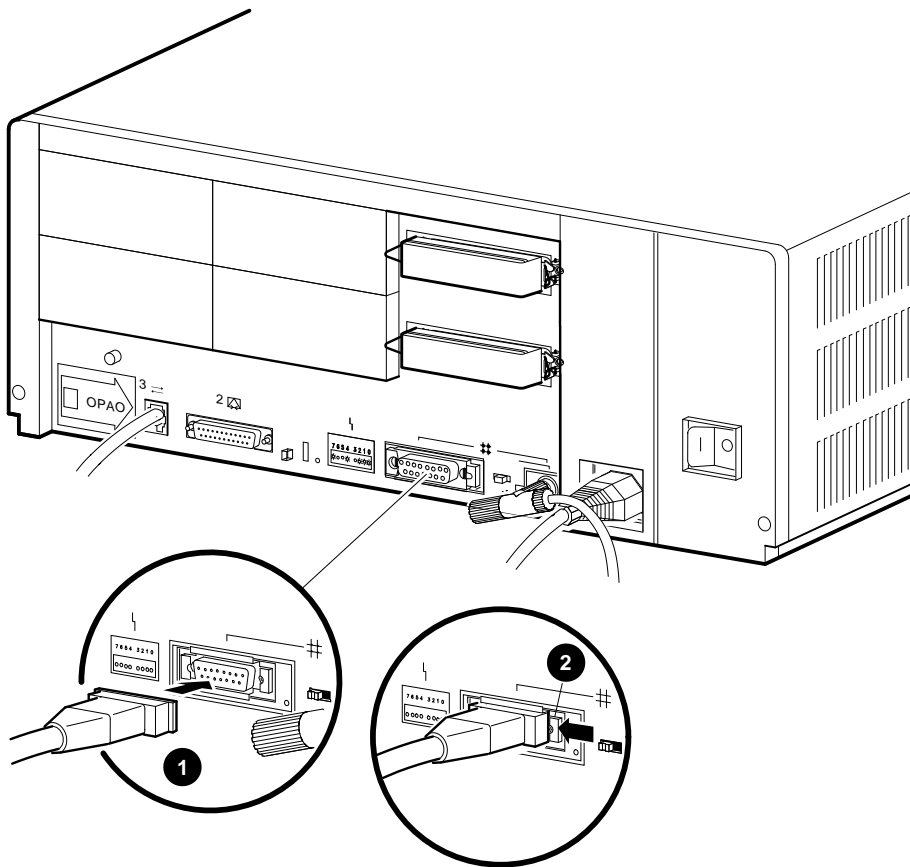
### **3.4 Connecting the System Unit to a Standard Ethernet Network**

To connect the system unit to a standard Ethernet network, follow these steps:

1. Unlock the standard Ethernet loopback connector by moving the sliding lock to the right.
2. Remove the standard Ethernet loopback connector from the standard Ethernet port.
3. Attach the 15-pin connector on the standard Ethernet transceiver cable to the back of the system unit.
4. Move the sliding lock on the standard Ethernet connector to the left, securing the standard Ethernet connection.



**Figure 3-5 Connecting a Transceiver Cable**



MLO-012040

- 1** Standard Ethernet Transceiver Cable
- 2** Sliding Lock

### 3.5 Testing the Ethernet Installation

When you complete the network installation procedure, follow these steps:

1. Set the system unit on/off switch to the on ( | ) position.
2. Enter the following command to test the Ethernet cables and terminators:

```
>>> TEST 5F 3
```

Test 5F tests the Ethernet device. Specifying 3 as the first parameter tests the external cables, terminators, or both. If the test is successful, the system displays the console prompt. If the test is unsuccessful, the system displays an error message similar to the following:

```
? Test_Subtest_5F_18 Loop_Subtest=0E Err_Type=FF DE_SGEC.lis
Vec=010C Prev_Errs=0002 P1=00000001 P2=00000000 P3=827DFF03 P4=00000000
P5=00000000 P6=00000000 P7=00000000 P8=00000001 P9=00000000 P10=00000000
r0=00000054 r1=000082E2 r2=00000001 r3=000082FA r4=01008230 r5=00000040
r6=000082E2 r7=20008000 r8=00008000 r9=20140758 r10=13000001 r11=2014044B
EPC=2005721A dser=0000 cesr=00000000 icsr=01 pcsts=F800 pcctl=FC13
cctl=00000007 bcetsts=03A0 bcedsts=0700 cefsts=00019220 nests=00
mmcdsr=003A3A00 mesr=00006000
```

If the device fails, see the *MicroVAX 3100 Model 90 Troubleshooting and Diagnostic Information* manual.

## 3.6 Completing the Ethernet Installation

The network coordinator must complete the installation. You must give the following information to the network coordinator:

- A unique node name consisting of a maximum of six alphanumeric characters

Choose any node name and ask the network coordinator to make sure that the node name is unique on the network.

- The system's Ethernet address

To determine the system's Ethernet address, follow these steps:

1. Enter the following command at the console prompt:

```
>>> SHOW ETHERNET
```

The system displays a response similar to the following:

```
Ethernet Adapter  
-EZA0 (08-00-2B-1A-0B-BB)
```

The alphanumeric string, shown in the form *nn-nn-nn-nn-nn-nn*, is the Ethernet address.

2. Write down the Ethernet address and give it to the network coordinator.

### 3.6.1 If the Network Installation Fails

If the network installation fails, contact your Digital Services representative.

## 3.7 Removing the System Unit from a Network

The following subsections describe how to remove the system unit from a network.

---

### Note

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Before removing the system unit from a network:

- Get the approval of the network coordinator.
  - See the operating system documentation for information on the shutdown procedures before stopping or turning off the system.
  - If the system is the server in a network, do not turn off, halt or restart the system without notifying the other network members.
- 

### 3.7.1 Removing the System Unit from a ThinWire Ethernet Cable

To remove the system unit from a ThinWire Ethernet cable, follow these steps:

1. Shut down the operating system using the procedure outlined in the operating system documentation.
2. Set the on/off switch on the back of the system unit to the off (O) position.

---

### Caution

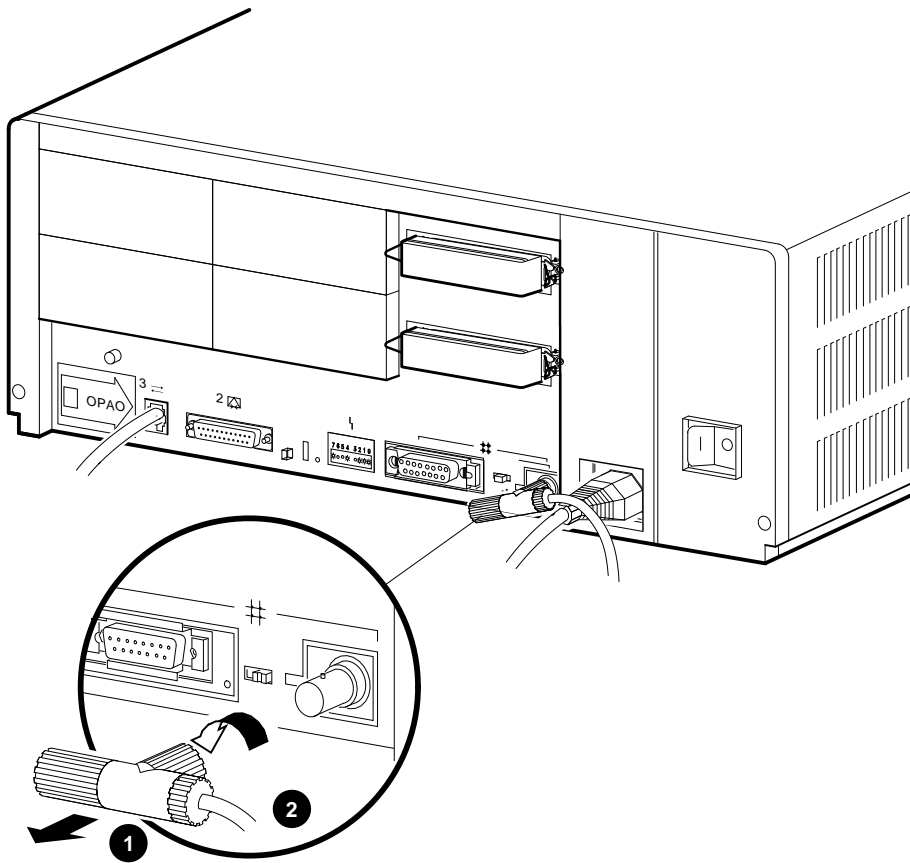
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Disconnecting the ThinWire Ethernet terminator or the ThinWire Ethernet cable connectors from the T-connector causes disruptions to network communications.

---

3. Disconnect the center of the T-connector from the ThinWire Ethernet connector on the back of the system unit (see Figure 3-6).

**Figure 3-6 Disconnecting the System Unit from a ThinWire Ethernet Cable**



MLO-012041

- 1** T-Connector
- 2** ThinWire Ethernet Cable

### 3.7.2 Removing the System Unit from a Standard Ethernet Transceiver Cable

To remove the system unit from a standard Ethernet transceiver cable, follow these steps:

1. Shut down the operating system using the procedure outlined in the operating system documentation.
2. Set the on/off switch on the back of the system unit to the off (O) position.

---

**Caution**

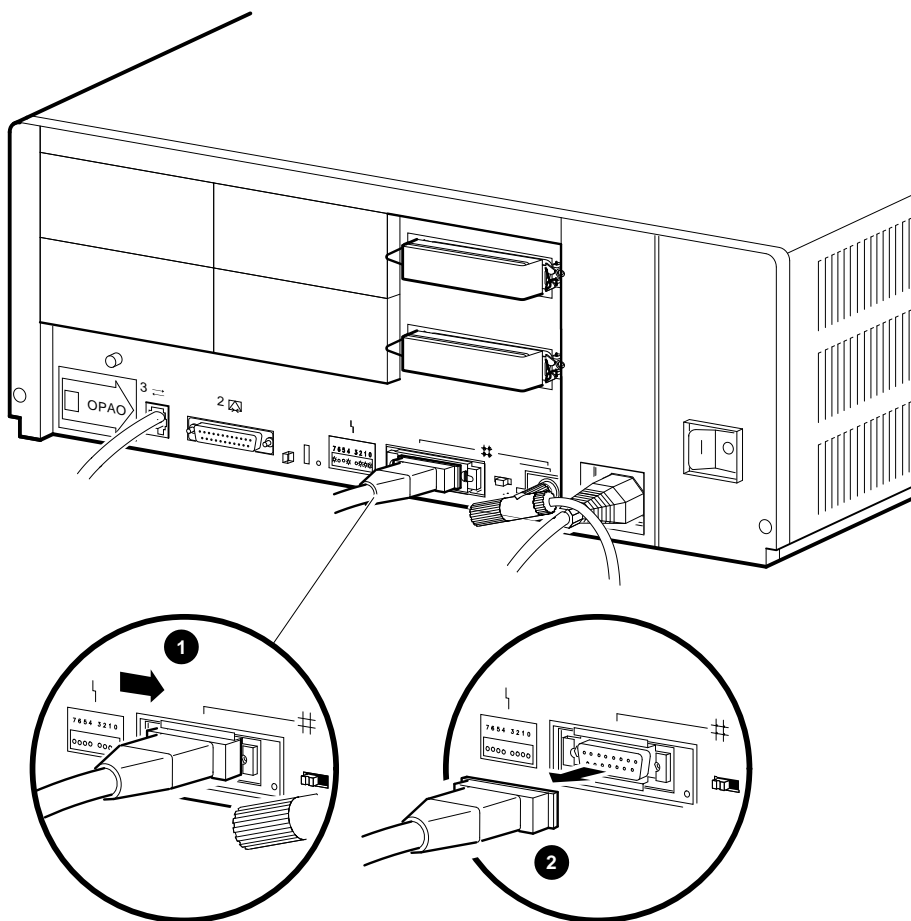
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Disconnecting the Standard Ethernet connector may cause disruptions to network communications.

---

3. Push the sliding lock to the right (see Figure 3-7).
4. Disconnect the transceiver cable from the standard Ethernet connector on the back of the system unit (see Figure 3-7).

**Figure 3–7 Disconnecting the System Unit from a Transceiver Cable**



MLO-012042

- ❶ Sliding Lock
- ❷ Standard Ethernet Transceiver Cable





# 4

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## Hardware Options

This chapter describes the hardware options of the MicroVAX 3100 Model 90. It also describes how to connect the external hardware options to the system. It includes information on the following:

- Internal hardware options
- External hardware options
- Connecting a SCSI expansion box; single or dual port
- Connecting peripherals

## 4.1 Internal Hardware Options

The system supports the following internal hardware options:

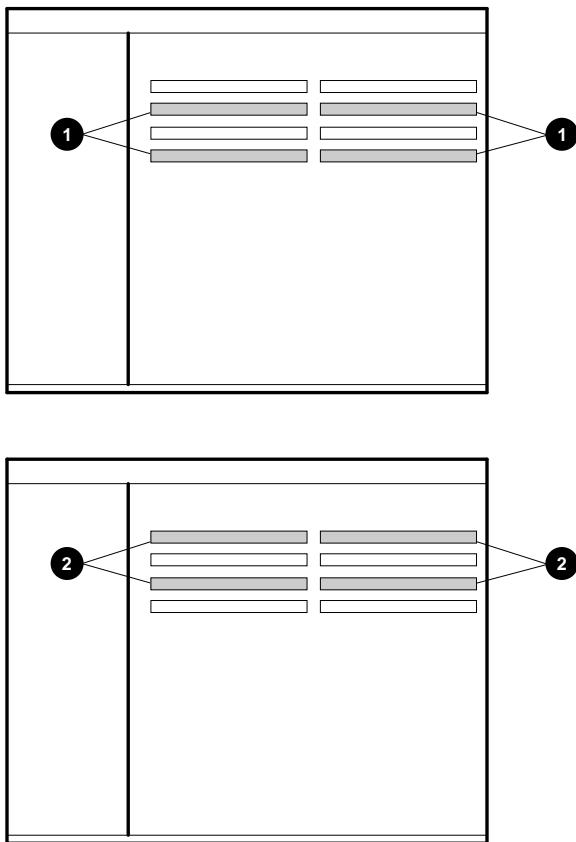
- MS44 or MS44L memory modules—The Model 90 system does not have any memory on the system board; it uses MS44 or MS44L memory modules. The modules must be installed in 4-module sets. Each module in the set must be the same type. Table 4–1 shows the capacity of the modules.

**Table 4–1 Capacity of Memory Modules**

Module	Capacity of Each Module	Capacity of the 4-Module Set
MS44	16 Mbyte	64 Mbyte
MS44L	4 Mbyte	16 Mbyte

Figure 4–1 shows the placement of the module sets. The first set of memory modules are installed in the slots labeled ❶, and the second set of memory modules are installed in the slots labeled ❷.

**Figure 4–1 Placement of Memory Module Sets in the Memory Backplane**



MLO-012051

- ❶ First set of memory modules
- ❷ Second set of memory modules
- Synchronous communications options—The system supports the DSW42-AA synchronous communications option. The DSW42-AA provides two synchronous communications ports and allows you to connect the system to a peripheral that uses an EIA-232 (V.24) 25-pin connector. You can use other interface standards with this option if you order different cables. Table 4–2 lists each interface standard and the part number of the corresponding cable.

**Table 4–2 Interface Standards and Cable Part Numbers**

Interface Standard	Cable Part Number	Extension Cable Part Number
EIA-232/V.24	BC19D-02 <sup>1</sup>	BC22F- <i>nm</i> <sup>3</sup>
EIA-423/V.10	BC19E-02 <sup>2</sup>	BC55D- <i>nm</i> <sup>4</sup>
EIA-422/V.11	BC19B-02 <sup>2</sup>	BC55D- <i>nm</i> <sup>4</sup>

<sup>1</sup>Supplied with the DSW42-AA option.

<sup>2</sup>Optional cable, order separately.

<sup>3</sup>Optional cable, order separately. The value of *nm* represents the cable length in feet (10, 25, or 50).

<sup>4</sup>Optional cable, order separately. The value of *nm* represents the cable length in feet (25 or 50).

The BC19x-02 cables listed in Table 4–2 are 2-foot cables. Extension cables are also available, but you must order them separately. Contact your Digital Sales representative for information on ordering any of the other cables that support these interface standards.

- Asynchronous communications options—The system supports three different asynchronous communications options. These options are as follows:
  - DHW42-AA—This asynchronous option provides eight asynchronous DEC423 data-line-only communications lines through one system port. You can connect up to eight peripherals using the MMJ ports on the harmonica (H3104) that connects to the option cable (BC16C-10).
  - DHW42-BA—This option is the same as the DHW42-AA, but provides 16 asynchronous DEC423 data-line-only communications lines through two system ports. You can connect up to 16 peripherals using the MMJ ports on two harmonicas (H3104) that connect to the option cables (BC16C-10).

Use the following cables instead of the BC16C-10 cable if you require longer than 10-foot cable lengths: BC16C-25 (25-foot), BC16C-50 (50-foot), BC16C-A0 (100-foot), or BC16C-B5 (250-foot). Use the following cables between the harmonica (H3104) and the DEC423 peripheral: BC16E-10, BC16E-25, or BC16E-50.

- DHW42-CA—This asynchronous option provides eight asynchronous EIA-232 modem control lines through two system ports using two breakout cables (BC29J-06).
- DHW42-UP—This upgrade option converts a DHW42-AA asynchronous option to a DHW42-BA option.

Attach one of the following cables to a connector on the breakout cable if you require longer cable lengths: BC22F-10, BC22F-25, or BC22F-50. The peripheral you are using may require a null-modem extension cable. See the peripheral documentation or contact your Digital Sales representative for information on the correct null-modem cable to use.

- KZDDA—This optional SCSI bus adapter provides the system with the ability to support seven SCSI devices external to the system box. These devices can be installed in addition to the the seven devices supported by the standard system.
- SCSI storage devices—The system supports the following internal SCSI devices:
  - RRD42 compact disc drive
  - RX26 diskette drive
  - RZ23L, RZ24, RZ24L, RZ25, RZ25L, RZ26, RZ26L, and RZ28 hard disk drives
  - TLZ06 cassette tape drive
  - TZK10 and TZK11 (QIC) tape drives
  - TZ30 tape drive

Contact your Digital Sales representative for information on how to order any of these internal options. Your Digital Services representative installs the internal options for you.

## 4.2 External Hardware Options

The following sections contain information on connecting the external hardware options to the system unit. The external hardware options for the MicroVAX 3100 Model 90 include the following:

- SCSI expansion boxes
- Printers, terminals, modems, and other devices that use asynchronous or synchronous connectors

Your Digital Sales representative can give you information on how to order a full range of Digital SCSI expansion boxes, printers, terminals, modems, and other devices that are compatible with the MicroVAX 3100 Model 90 system.

## 4.3 Connecting a SCSI Expansion Box

The following subsections contain information on:

- Guidelines for connecting expansion boxes
- Selecting available SCSI IDs on the system
- Setting the SCSI ID of devices in the expansion box
- Preparing the system unit for an expansion box
- Connecting the SCSI cable
- Checking the expansion box connections

### 4.3.1 Guidelines for Connecting Expansion Boxes

Use the following guidelines when connecting expansion boxes:

- In the standard system, you can connect two SCSI devices in an expansion box (in addition to connecting five devices internally).

If the KZDDA controller is installed, you can connect up to seven SCSI devices on the second SCSI bus.

- The maximum length of the SCSI cables must not exceed 6 meters (19.6 feet). This maximum length includes a maximum of 2 meters inside the system unit and a maximum of 4 meters outside the system unit. Therefore the external SCSI cable length, including the length of the SCSI cables that are inside the expansion boxes, must not exceed 4 meters (13.1 feet).
- Each device connected to a SCSI bus must have a unique SCSI ID.
- Terminate the SCSI bus as described in the expansion box documentation.
- Plug the expansion boxes into the same grounded power strip or electrical circuit as the system unit.
- Do not connect more than two tape drive devices.

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#### Caution

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- Some expansion boxes are restricted to either 110 V ac or 220 V ac operation. Make sure that the voltage requirement of the expansion box used is compatible with the supply voltage.
  - Turn on the expansion boxes before you turn on the system unit. This procedure ensures that the device in each expansion box is ready for use and that the system firmware includes the device in the configuration display.
  - Do not connect or disconnect SCSI expansion boxes while the system is turned on. Doing so can cause damage to the equipment or corrupt data.
  - Digital cannot guarantee the correct operation of any SCSI bus that uses cable assemblies not supplied by Digital or not configured in accordance with these guidelines.
-

### 4.3.2 Selecting Available SCSI IDs on the System

You must identify which SCSI IDs are available before connecting an expansion box. Use the configuration display to determine this information. To see the configuration display, enter the following command:

```
>>> SHOW CONFIG
```

The system displays information similar to the following:

```
KA50-A V2.3, VMB 2.14  
08-00-2B-33-CF-C9  
80MB
```

TstNbr	DevNam	Info
0	CPU_BD	OK
A8	MEM	OK
E4	DZ	OK
E0	SCSI	OK ❶ 3-RZ24L 6-Adapter 7-RRD42 ❷
5F	NI	OK
F0	SCSI_B	OK ❸ 0-RZ23L 6-Adapter ❹
0	QBUS	OK
E8	COMM	OK
		DSW41/42 2 CHANNEL V4.10-7b
EC	ASYNC	OK
		DHW41/2 V1.6

- ❶ This line shows the status of the first SCSI device. The letters OK indicate that it is functioning correctly.
- ❷ This line shows the SCSI IDs that are occupied by devices on the first SCSI bus. For example, the RZ24L disk drive occupies SCSI ID 3.
- ❸ This line shows the status of the second SCSI device.
- ❹ This line shows the SCSI IDs that are occupied by devices on the second SCSI bus. For example, the RZ23L disk drive occupies SCSI ID 0.

SCSI ID 6 is the default ID for the SCSI bus adapter.

There are eight SCSI IDs, numbered from 0 to 7. Select any SCSI ID that is not occupied by another device including the SCSI bus adapter.



### 4.3.3 Setting the SCSI ID of Devices in the Expansion Box

The expansion box devices have default SCSI IDs set at the factory before they are shipped. If the default ID of a device is being used by another device on the same SCSI bus, you must reset the SCSI ID of the new device to an unused ID. See Section 4.3.2 for information on selecting SCSI IDs. See the documentation supplied with the expansion box for information on setting the SCSI IDs. Table 4–3 shows the SCSI IDs that Digital usually assigns to devices.

**Table 4–3 Devices and Priorities Associated with SCSI IDs**

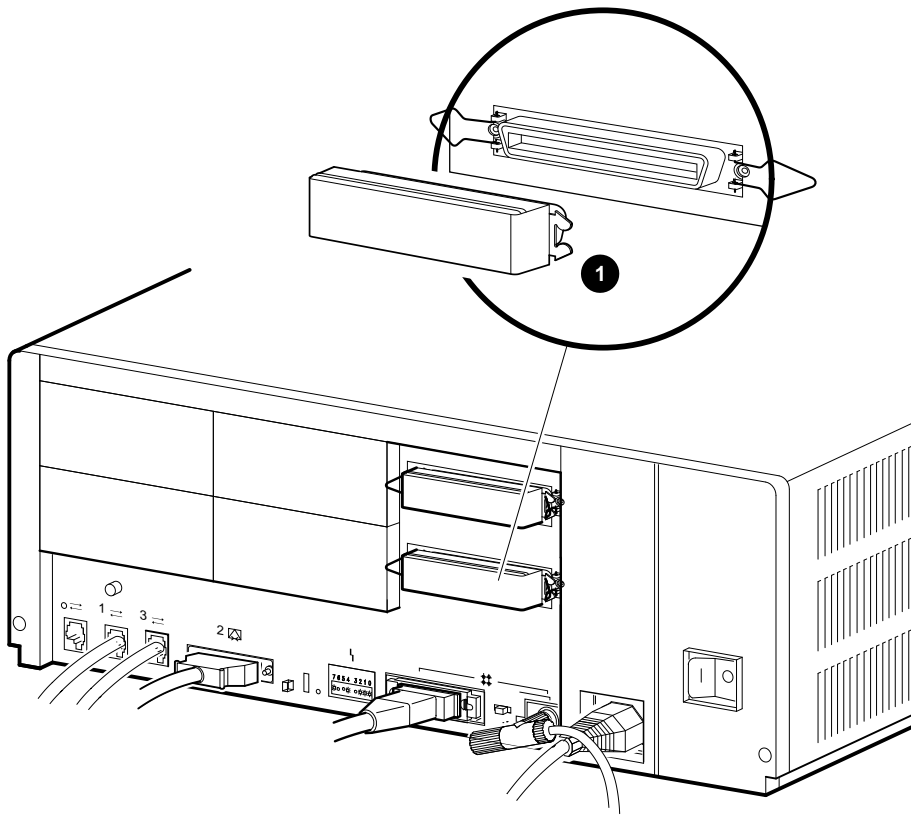
SCSI ID	Priority	Devices
0	Lowest	Disk drive
1 to 3		Disk drive (SCSI ID 3 is normally the system disk)
4		CD-ROM or optical drive
5		Tape drive
6		SCSI controller
7	Highest	Not used, but available

#### **4.3.4 Preparing the System Unit for an Expansion Box**

To prepare the system unit for an expansion box, follow these steps:

1. Shut down the operating system using the procedure outlined in the operating system documentation.
2. Set the on/off switch on the system unit to the off (O) position.
3. Determine which SCSI bus to connect to the expansion box.
4. Remove the appropriate SCSI terminator (Figure 4-2); the lower port connects to the first SCSI bus (SCSI port A), and the upper port connects to the second SCSI bus (SCSI port B).
5. Keep the SCSI terminator. You must reattach it if you disconnect the expansion boxes from the system unit.

**Figure 4-2 Removing the SCSI Terminator (Port A Shown)**



MLO-012043

**1** SCSI terminator

### 4.3.5 Connecting the SCSI Expansion Box

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**Caution**

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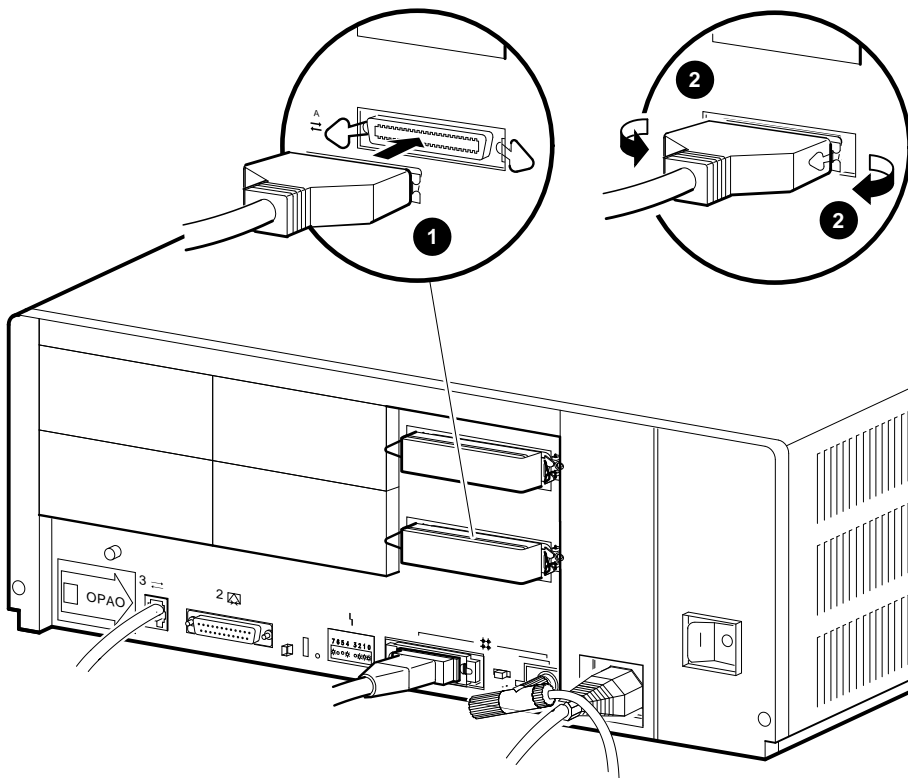
You must complete the procedures outlined in the following sections before you start the procedure in this section:

- Section 4.3.1, Guidelines for Connecting Expansion Boxes
  - Section 4.3.2, Selecting Available SCSI IDs on the System
  - Section 4.3.3, Setting the SCSI ID of Devices in the Expansion Box
  - Section 4.3.4, Preparing the System Unit for an Expansion Box
- 

The following procedure is applicable when connecting an expansion box to either SCSI port. Connect the SCSI cable to the system unit and to the expansion box as follows:

1. Set the on/off switches on the system unit and the expansion box to the off (O) position.
2. Set the correct SCSI ID for each device in the expansion box. See Section 4.3.2 for information on selecting the available SCSI IDs. See the expansion box documentation for information on setting the SCSI IDs.
3. Connect one end of the 50-pin to 50-pin cable that was supplied with the expansion box to the appropriate SCSI port on the system unit. Close the bail lock loops. See Figure 4-3.
4. Connect the other end of the 50-pin to 50-pin cable to the expansion box as described in the expansion box documentation. Close the bail lock loops.
5. Connect the SCSI terminator as described in the expansion box documentation.
6. Connect the power cord to the expansion box.
7. Connect the other end of the power cord to the same grounded power strip or electrical circuit as the system unit.
8. Set the on/off switch on the expansion box to the on ( | ) position.
9. Set the on/off switch on the system unit to the on ( | ) position.
10. Check the system to ensure that it recognizes the connection. See Section 4.3.6 for information on checking expansion box connections.

**Figure 4-3 Connecting the SCSI Cable (Port A Shown)**



MLO-012044

- ❶ SCSI Cable
- ❷ Bail Lock Loop

### 4.3.6 Checking Expansion Box Connections

Enter the following command to check the expansion box connections:

```
>>> SHOW CONFIG
```

The system responds with a display similar to the following:

```
KA50-A V2.3, VMB 2.14
08-00-2B-33-CF-C9
80MB

TstNbr  DevNam      Info
-----  -
      0    CPU_BD    OK
      A8    MEM        OK
      E4    DZ         OK
      E0    SCSI       OK
           2-RZ58 3-RZ24L  6-Adapter  7-RRD42 ❶
      5F    NI         OK
      F0    SCSI_B     OK
           0-RZ23L  6-Adapter
      0    QBUS       OK
      E8    COMM       OK
           DSW41/42 2 CHANNEL V4.10-7b
      EC    ASYNC      OK
           DHW41/2 V1.6
```

❶ If the system recognizes the expansion box that you have connected, this line contains the IDs and names of the expansion box devices that you connected. For example, an RZ58 occupies SCSI ID 2.

If you do not see the names and SCSI IDs of the devices, see the *MicroVAX 3100 Model 90 Troubleshooting and Diagnostic Information* manual.

## 4.4 Connecting Peripherals

The following subsections contain information on the following:

- Connecting peripherals to a DEC423 MMJ port
- Connecting a peripheral to the asynchronous modem control port (port 2)
- Connecting peripherals to an optional asynchronous port
- Connecting peripherals to an optional synchronous port

#### 4.4.1 Connecting Peripherals to a DEC423 MMJ Port

To connect peripherals that use DEC423 cables (BC16E) to MMJ ports 0, 1, or 3, follow these steps:

1. If you are connecting a peripheral device to MMJ port 0 or MMJ port 1, you must first peel back the removable label that points out the console port (MMJ3). This label is marked OPA0, and covers ports 0 and 1 (see Figure 4-4).
2. Set the on/off switch on the system unit to the off (O) position.
3. Set the on/off switch on the peripheral to the off (O) position.
4. Connect one end of the DEC423 cable to either MMJ port 0, 1, or 3.

---

**Note**

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MMJ port 3 must be connected to the console.

In some countries, the peripheral cable has an earth drain wire. Connect this earth drain wire to the grounding pillar above MMJ port 1 using the screw provided with the cable.

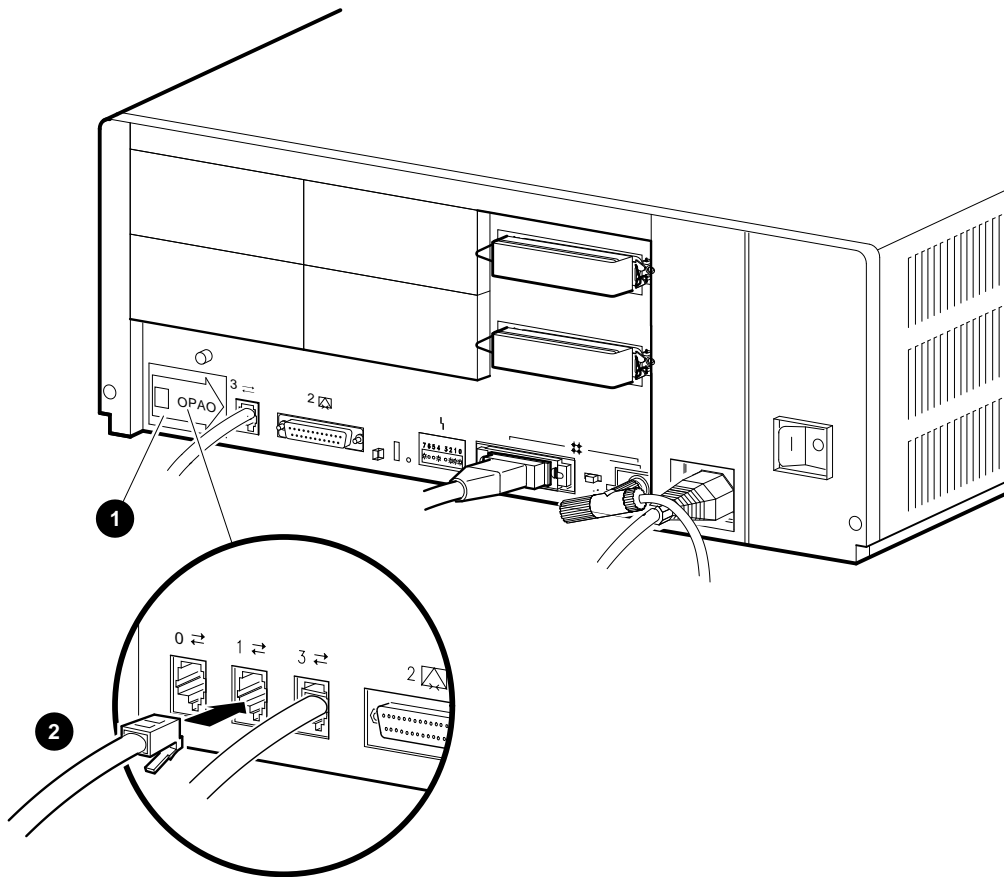
---

5. Connect the other end of the DEC423 cable to the correct port on the peripheral.
6. Set the on/off switch on the peripheral to the on ( | ) position.
7. Set the on/off switch on the system unit to the on ( | ) position.

BC16E cables are available in the following lengths: 10 feet (BC16E-10), 25 feet (BC16E-25), or 50 feet (BC16E-50).



**Figure 4-4 Connecting a Peripheral to MMJ Port 1**



MLO-012045

- ❶ Removable Label
- ❷ DEC423 Peripheral Cable

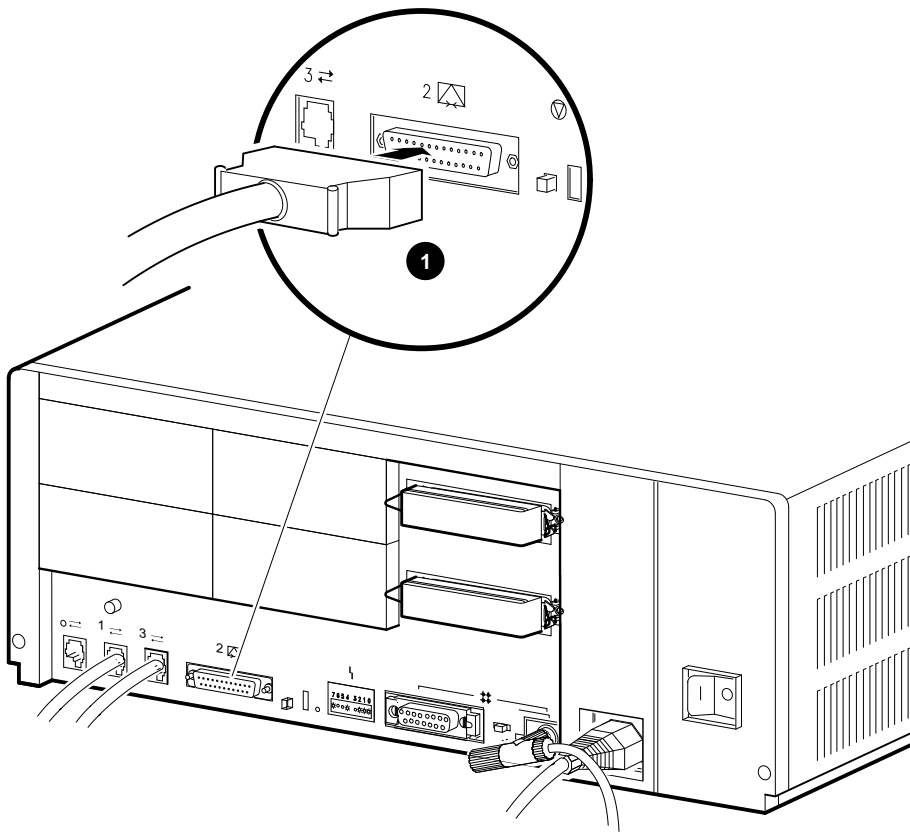
#### 4.4.2 Connecting a Peripheral to the Asynchronous Modem Control Port

You can connect peripherals that use EIA-232 connectors to the asynchronous modem control port (port 2) on the back of the system unit. Alternatively, the supplied EIA-232 to DEC423 adapter (H8575-A) allows you to connect peripherals that use DEC423 connectors. To connect a peripheral to the asynchronous modem control port, follow these steps:

1. If you are connecting a peripheral using EIA-232 cables, follow these steps:
  - a. Set the on/off switch on the system unit to the off (O) position.
  - b. Set the on/off switch on the peripheral to the off (O) position.
  - c. Connect the 25-pin D-sub connector of the peripheral cable to the asynchronous modem control port (see Figure 4-5).
  - d. If the connector has screws on either side, tighten them using a small screwdriver.
  - e. Connect the other end of the peripheral cable to the correct port on the peripheral.
  - f. Set the on/off switch on the peripheral to the on ( | ) position.
  - g. Set the on/off switch on the system unit to the on ( | ) position.

EIA-232 cables are available in the following lengths: 10 feet (BC22F-10), 25 feet (BC22F-25), or 50 feet (BC22F-50). The peripheral you are using may require a null-modem extension cable. See the peripheral documentation or contact your Digital Sales representative for information on the correct null-modem cable to use.

**Figure 4-5 Connecting a Peripheral to the Asynchronous Modem Control Port**

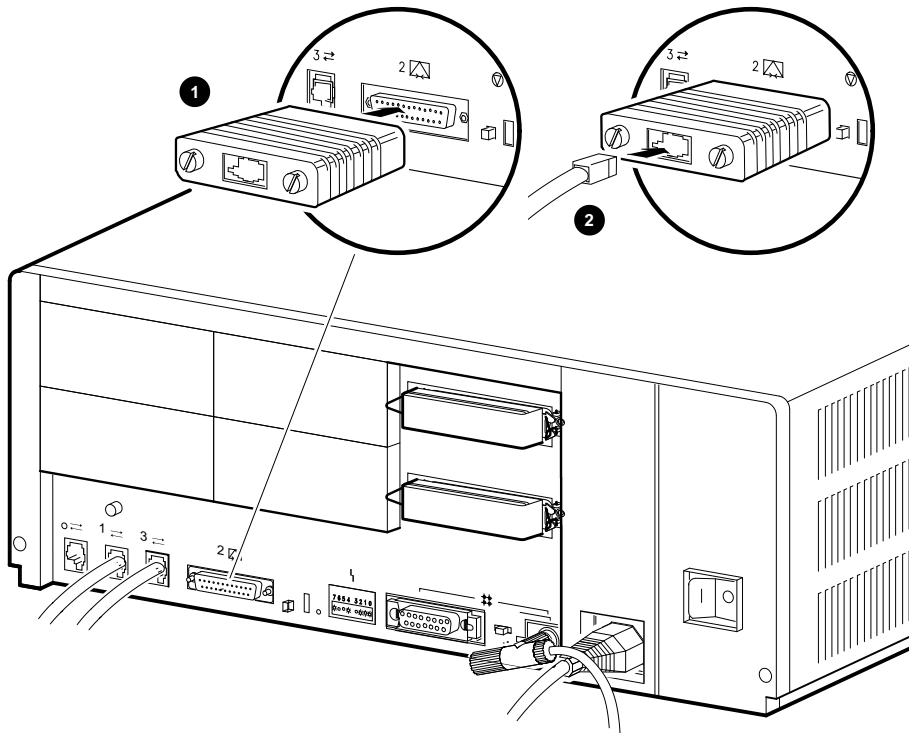


MLO-012046

**1** EIA-232 Connector

2. If you are connecting a peripheral using DEC423 cables, follow these steps:
  - a. Set the on/off switch on the system unit to the off (O) position.
  - b. Set the on/off switch on the peripheral to the off (O) position.
  - c. Connect the EIA-232 to DEC423 adapter to the asynchronous modem control port (see Figure 4-6).
  - d. Tighten the screws on each side of the adapter using a small screwdriver.
  - e. Connect the DEC423 cable to the MMJ port on the adapter.
  - f. Connect the other end of the DEC423 cable to the correct port on the peripheral.
  - g. Set the on/off switch on the peripheral to the on ( | ) position.
  - h. Set the on/off switch on the system unit to the on ( | ) position.

**Figure 4-6 Connecting a Peripheral to the Asynchronous Modem Control Port Using an EIA-232 to DEC423 Adapter**



MLO-012047

- ❶ EIA-232 to DEC423 Adapter (H8575-A)
- ❷ DEC423 MMJ Connector

### 4.4.3 Connecting Peripherals to an Optional Asynchronous Port

There are three asynchronous communications options for the MicroVAX 3100 Model 90:

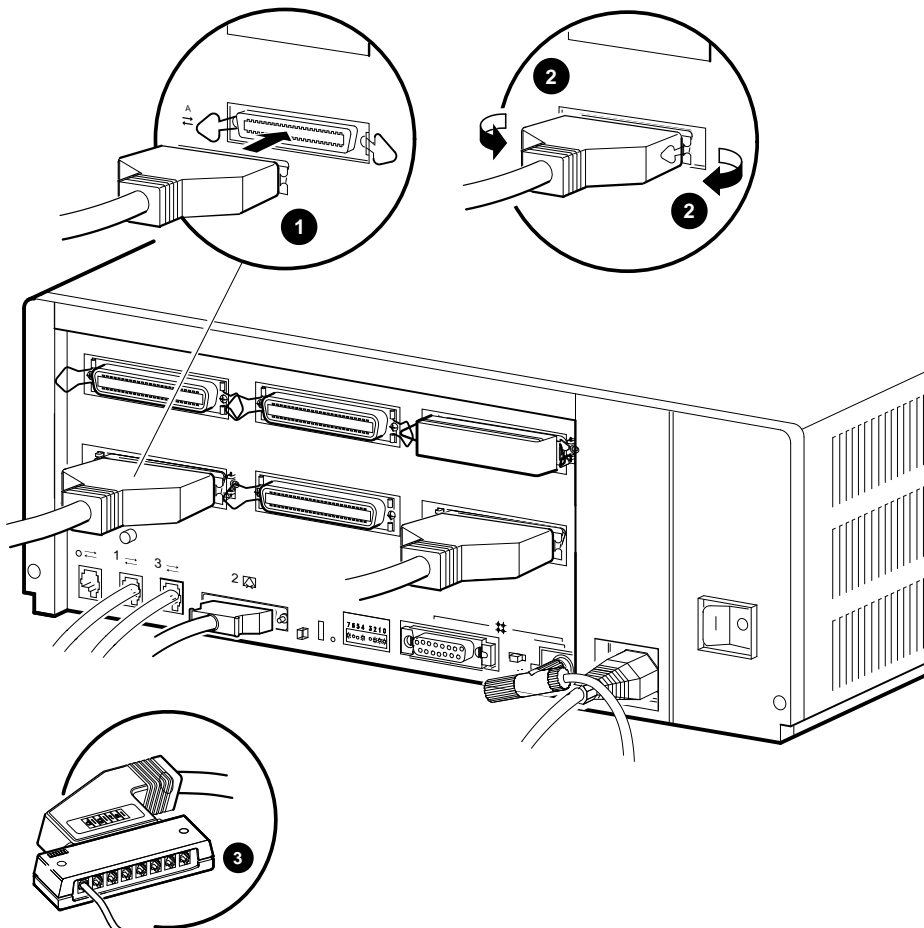
- DHW42-AA—Provides one eight-line data-line-only asynchronous port
- DHW42-BA—Provides two eight-line data-line-only asynchronous ports
- DHW42-CA—Provides two four-line asynchronous ports with modem control

#### Connecting Peripherals to a DHW42-AA or DHW42-BA Option

If the system has the DHW42-AA or DHW42-BA asynchronous communications option installed, the system has one or two eight-line data-only asynchronous ports. You can connect up to eight peripherals to each of these ports using the H3104 harmonica. Section 4.1 gives more information on the DHW42-AA and DHW42-BA asynchronous communications options. To connect a peripheral to an asynchronous port, follow these steps:

1. Set the on/off switch on the system unit to the off (O) position.
2. Set the on/off switch on the peripheral to the off (O) position.
3. Connect the straight connector of the BC16C-10 cable to one of the asynchronous ports on the back of the system unit (see Figure 4-7).
4. Close the bail lock loops on each side of the connector.
5. Connect the angled connector of the BC16C-10 cable to the H3104 harmonica.
6. Close the bail lock loops on each side of the connector.
7. Connect one end of a DEC423 cable to one of the eight MMJ ports on the harmonica.
8. Connect the other end of the DEC423 cable to a DEC423 port on the peripheral.
9. Set the on/off switch on the peripheral to the on (|) position.
10. Set the on/off switch on the system unit to the on (|) position.

**Figure 4-7 Connecting a Peripheral to Asynchronous Port A**



MLO-012048

- ❶ Asynchronous Option Cable (BC16C-10)
- ❷ Bail Lock Loops
- ❸ Harmonica

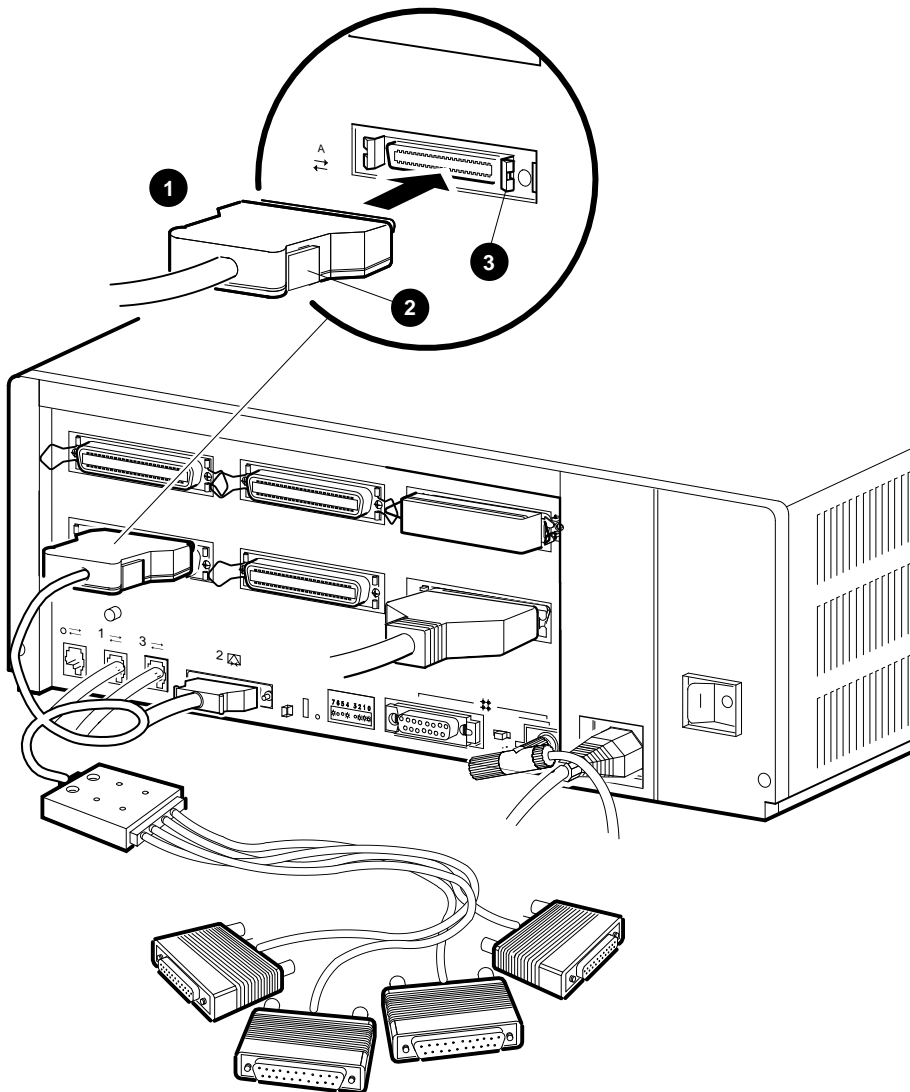
### **Connecting Peripherals to a DHW42-CA Option**

If the system has the DHW42-CA asynchronous communications option installed, the system has two four-line asynchronous ports with modem control. You can connect up to four peripherals to each of these ports using the breakout cable (BC29J-06) supplied with the option. Section 4.1 gives more information on the DHW42-CA asynchronous communications option. To connect a peripheral to an asynchronous port, follow these steps:

1. Set the on/off switch on the system unit to the off (O) position.
2. Set the on/off switch on the peripheral to the off (O) position.
3. Hold in the connector clips on either side of the 50-pin connector of the breakout cable and connect it to one of the asynchronous ports on the back of the system unit (see Figure 4–8).
4. Release the clips. The hooks on the port secure the connector in place.
5. Connect one of the four EIA-232 connectors on the breakout cable to the peripheral.
6. Set the on/off switch on the peripheral to the on ( | ) position.
7. Set the on/off switch on the system unit to the on ( | ) position.



**Figure 4-8 Connecting a Peripheral to Asynchronous Port A (DHW42-CA)**



MLO-012049

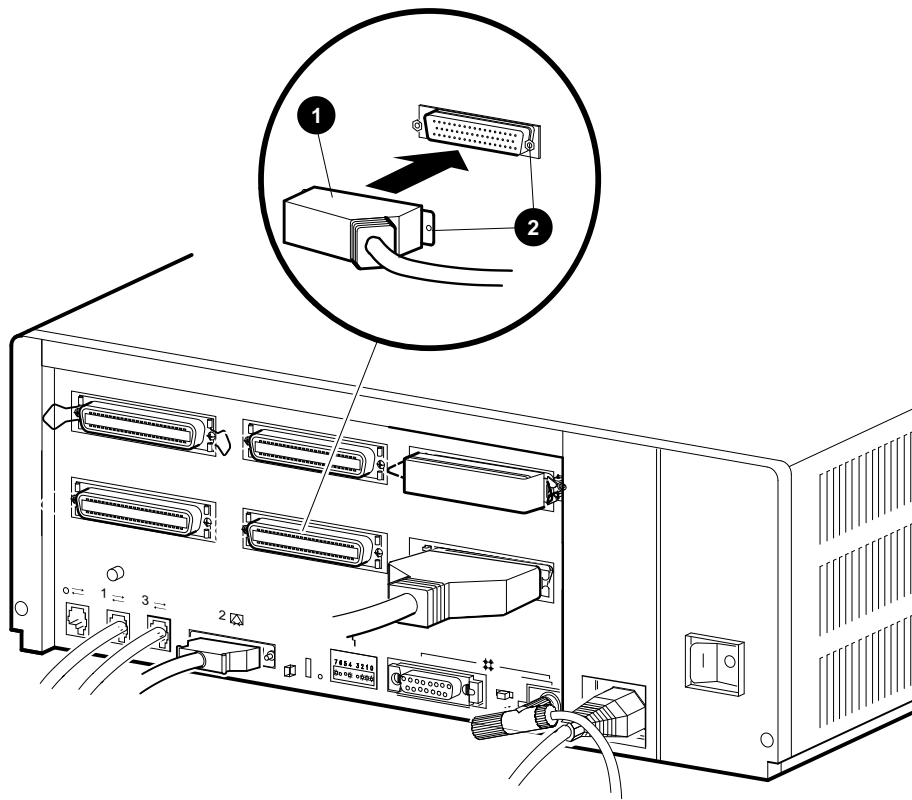
- ❶ Asynchronous Option Breakout Cable (BC29J-06)
- ❷ Connector Clip
- ❸ Hook

#### 4.4.4 Connecting Peripherals to an Optional Synchronous Port

If the system has the DSW42-AA synchronous communications option installed, the system has two synchronous modem ports. Section 4.1 gives more information on the DSW42-AA synchronous communications option. Table 4-2 lists the cables that you can use with the option. The EIA-232/V.24 cables (BC19D-02) are the standard cables shipped with the option. If you are using a synchronous interface standard other than EIA-232/V.24, use one of the optional cables listed in Table 4-2. To connect a peripheral to a synchronous port, follow these steps:

1. Set the on/off switch on the system unit to the off (O) position.
2. Set the on/off switch on the peripheral to the off (O) position.
3. Connect both the 50-pin connectors of the option cables to the synchronous ports on the back of the system unit (see Figure 4-9).
4. Connect the other connectors of the option cables to the communications ports on the peripherals.
5. If the option cable connectors are fitted with screws, secure the connectors to the ports by tightening them on each side.
6. Set the on/off switch on the peripheral to the on (|) position.
7. Set the on/off switch on the system unit to the on (|) position.

**Figure 4-9 Connecting a Peripheral to Synchronous Port 0**



MLO-012050

- ❶ Synchronous Option Cable
- ❷ Fastening Hardware



# A

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## Associated and Related Documents

This appendix lists the associated and related documents. Some of the following documents may not be available in every country. Contact your Digital Sales representative for information on the availability of particular documents.

### A.1 Associated Documents

The following documents contain information on the MicroVAX 3100 Model 90:

- *MicroVAX 3100 Model 90 Cover Letter* (EK-A0608-CL)
- *MicroVAX 3100 Model 90 Installation Information* (EK-A0604-IN)
- *MicroVAX 3100 Model 90 Customer Technical Information* (EK-A0606-TM)
- *MicroVAX 3100 Model 90 Troubleshooting and Diagnostic Information* (EK-A0607-TI)
- *MicroVAX 3100 Model 40 to Model 90 Upgrade Guide* (EK-A0612-UP)
- *MicroVAX 3100 Model 80 to Model 90 Upgrade Guide* (EK-A0614-UP)

#### **VMS Factory Installed Software (FIS) Documentation**

The following document contains information on VMS FIS:

- *OpenVMS Factory Installed Software User Information* (EK-A0377-UG)

## A.2 Related Documents

The following documents contain information related to the system:

### Internal Device Documentation

- *RRD42 Disc Drive Owner's Manual* (EK-RRD42-OM)
- *RX26 Diskette Drive Owner's Reference Card* (EK-RX26D-RC)
- *RZ Series Disk Drive Reference Manual* (EK-RZXXD-RM)
- *TLZ06 Cassette Tape Drive Owner's Manual* (EK-TLZ06-OM)
- *TZ30 Cartridge Tape Drive Subsystem Owner's Manual* (EK-OTZ30-OM)
- *TZK10 Cartridge Tape Drive Owner's Guide* (EK-TZK10-OG)
- *TZK11 Tape Backup System User Guide* (EK-TZK11-UG)
- *MicroVAX 3100 Platform Options* (EK-A0519-MG)

### VAX Handbook Series

- *VAX Architecture Handbook* (EB-19580-20)
- *VAX Software Handbook* (EB-21812-20)

### DECconnect System Documentation

- *DECconnect System General Description* (EK-DECSY-GD)
- *DECconnect System Requirements Evaluation Workbook* (EK-DECSY-EG)
- *DECconnect System Installation and Verification Guide* (EK-DECSY-VG)
- *DECconnect System Standalone ThinWire Networks: Planning and Installation Guide* (EK-DECSY-TG)
- *DECconnect System Planning and Configuration Guide* (EK-DECSY-CG)
- *Workstations Network Guide* (EK-VS315-GD)

# B

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## Removable Storage Media

This appendix contains information on the use and storage of the following media types that are used by the optional removable media storage devices:

- Tape cartridges
- QIC tapes
- Cassette tapes (DAT)
- Diskettes
- Compact discs

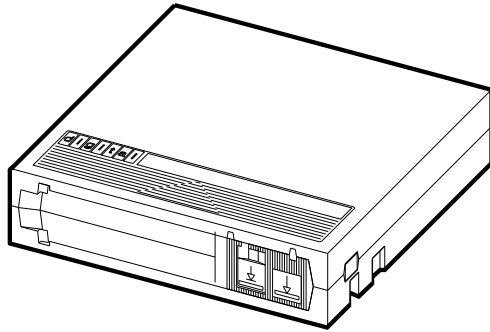
### B.1 Tape Cartridges

The CompacTape cartridge (see Figure B-1) is a 10 cm by 10 cm (4 in by 4 in) plastic tape cartridge that can be used by TZ30 tape drives. The TZ30 tape drive is supplied with a CompacTape cartridge.

The CompacTape II is the successor to the CompacTape cartridge. The CompacTape II supports higher recording densities because it has tighter tolerances than the CompacTape. The CompacTape and the CompacTape II (when used with TZ30 tape drive) have a capacity of 95M bytes. The TZ30 tape drive *does not* support CompacTape III cartridges.

Tapes that were originally written by a different type of tape drive may not be compatible with the TZ30 tape drive. If the tape is not compatible, the TZ30 automatically unloads the tape cartridge and the green LED flashes to indicate a tape error. Table B-1 shows the compatibility of the tape cartridges with the TZ30 tape drive.

**Figure B-1 CompacTape Cartridge**



RE\_EN06137A\_91

**Table B-1 Initialized Cartridge Compatibility**

<b>If the tape was initialized in a . . .</b>	<b>the TZ30 drive is . . .</b>
TZ30	able to read or write to it.
TK50	able to read or write to it.
TK70	unable to read or write to it <sup>1</sup> .
TZ85	unable to read or write to it <sup>1</sup> .

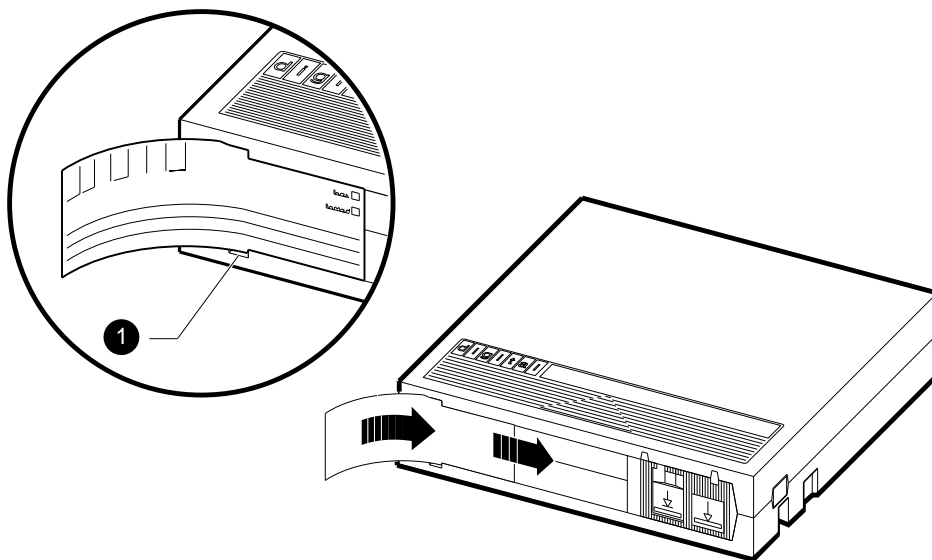
<sup>1</sup>Not compatible

**B.1.1 Labeling a Tape Cartridge**

Always label tape cartridges. There is a slot for the label on the front of the cartridge. The label is visible when the cartridge is in the drive. Labels or markings on any other part of the cartridge can interfere with the proper operation of the drive. Do not write on the cartridge with a pen, pencil, or other marking instrument.

The labels supplied with the CompacTape II cartridges have spaces that mark the capacity of the tape cartridge. Mark the 95M-byte block on the label when using the TZ30 to write data to the tape cartridge.





RE\_EN06138A\_91

❶ Label Slot

## B.1.2 Writing to and Write-Protecting Tape Cartridges

CompacTape and CompacTape II cartridges have a write-protect switch that prevents an accidental overwrite of data. The system can read information on the tape regardless of the position of the write-protect switch. However, the system cannot write data to a write-protected tape.

### Write-Protecting a Tape

When you use a tape to install software, set the write-protect switch on the front of the cartridge to the write-protect position.

To write-protect a tape, set the write-protect switch to the write-protect position by sliding it left towards the label until it locks in place (see Figure B-2). An orange rectangle appears when the write-protect switch locks in the write-protect position.

### Writing to a Tape

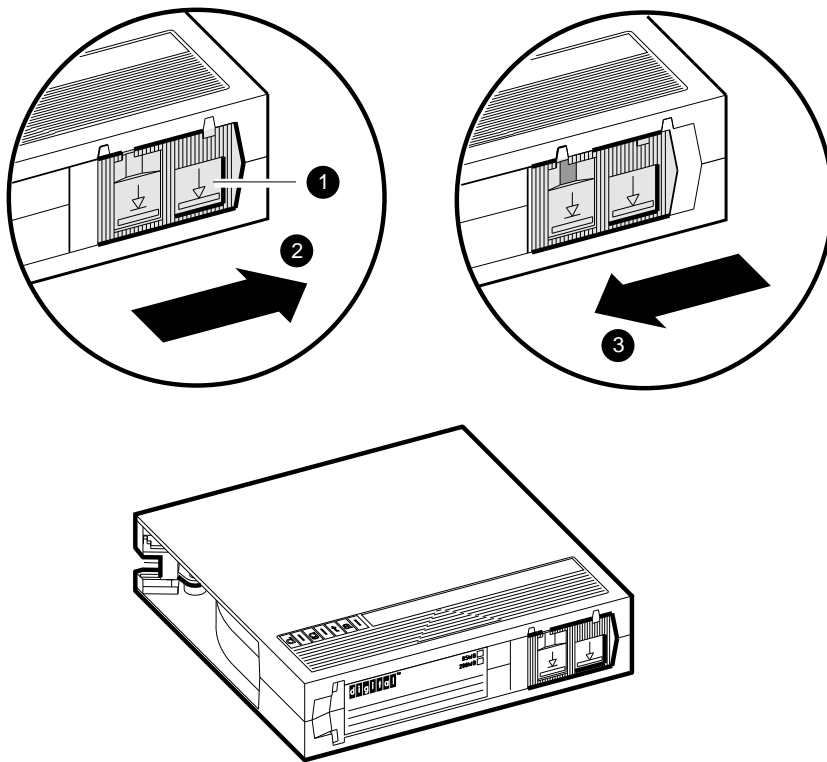
When you use a tape to make a backup copy or to write data, set the write-protect switch to the write-enable position. To set the switch to the write-enable position, slide it to the right, away from the label, until the switch locks in place.

### **B.1.3 Handling and Storing Tape Cartridges**

Inside the cartridge, a 600-foot single reel of magnetic tape stores data. A plastic tape leader is at the beginning of the tape. Take the following precautions when handling and storing tapes:

- Do not touch the exposed surface of the tape.
- Do not drop the tape cartridge.
- Allow tape cartridges to reach room temperature before using them.
- Store the tape where the room temperature is between 10°C and 40°C (50°F and 104°F) and the humidity is between 20% and 80%.
- Place the identification label in the slot provided on the tape cartridge.
- Store the tape cartridge in its plastic cover.
- Do not expose the tape to direct sunlight, heat, magnetic fields, or X-rays.

**Figure B-2 Write-Protect Switch Positions**



- ❶ Write-Protect Switch
- ❷ Write-Enable Position
- ❸ Write-Protect Position

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## B.2 Quarter-Inch Cartridge (QIC) Tapes

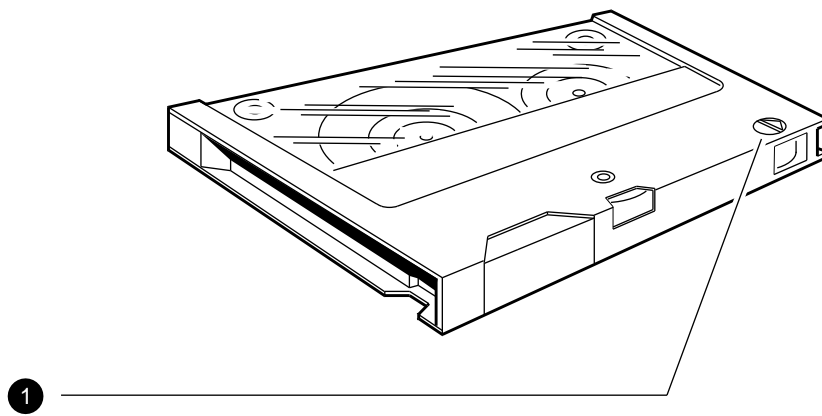
The TZK10 cartridge tape drive is shipped with a DC6320 QIC tape. The TZK11 cartridge tape drive is shipped with a DC9200 QIC tape. Table B-2 lists supported the QIC tape cartridges.

**Table B-2 QIC Tape Cartridges**

Cartridge	Capacity	Format	TZK10 Support	TZK11 Support
DC9200XL	Up to 2.5 GB	QIC-2GB	N	Y
DC9200	Up to 2.0 GB	QIC-2GB	N	Y
DC9100L	Up to 1.2 GB	QIC-1GB	N	Y
DC9100	Up to 1.0 GB	QIC-1GB	N	Y
DC6525	Up to 525 MB	QIC-525	Y	Y
DC6320	Up to 320 MB	QIC-525	Y	Y
DC6250	Up to 250 MB	QIC-150	Y	Y
DC6150/DC600XTD	Up to 150 MB	QIC-150	Y	Y
DC615/DC600A	Up to 120 MB	QIC-120	Y	Y
DC300/DC300XLP	Up to 45 MB	QIC-24	Y	Y

Figure B-3 shows a QIC tape.

Figure B-3 QIC Tape



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- ❶ Write-Protect Switch

### B.2.1 Guidelines for Using QIC Tapes

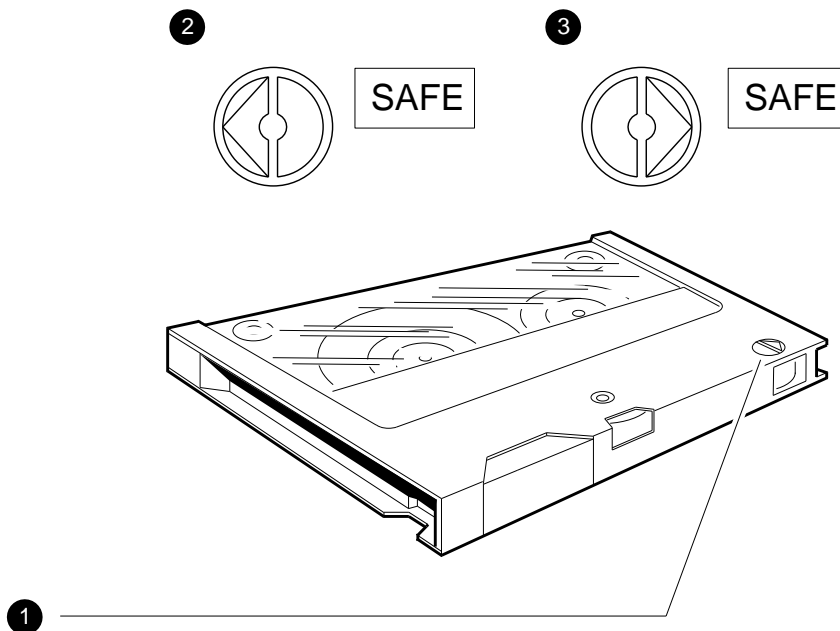
Use the following guidelines when using QIC tapes:

- Do not drop the tape.
- Store the tape where the room temperature is between 10°C and 40°C (50°F and 104°F) and the humidity is between 20% and 80%.
- Do not expose the tape to direct sunlight, abrasive particles, or electromagnetic fields.
- Store the QIC tape in its protective container, placed on its edge, or stacked. Do not stack QIC tapes more than five high.
- Place the identification label in the space provided on the top of the QIC tape.
- Allow QIC tape cartridges to reach room temperature before using them.

## B.2.2 Setting the QIC Tape Write-Protect Switch

There is a write-protect switch on one corner of the QIC tape. This switch allows you to write-protect the data on the tape. After writing data to the QIC tape, write-protect the tape to prevent accidental erasure or overwriting of that data. Use the write-protect switch as follows:

- Turn the write-protect switch to the safe (write-protect) position when you want to protect the data on the tape, or when you want to read or copy data from the tape.
- Turn the write-protect switch to the write-enable position when you want to write data to the tape.



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- ❶ Write-Protect Switch
- ❷ Write-Enable Position
- ❸ Write-Protect Position

### B.3 Cassette Tapes (DAT)

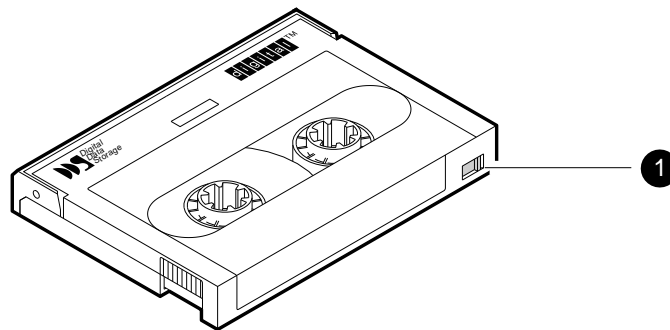
The TLZ06 cassette tape drive is shipped with a 90-meter TLZ06-CA 4-mm tape. You can also use the TLZ06 with the 60-meter TLZ04-CA tape. Table B-3 describes both cassette tapes.

**Table B-3 Cartridge Compatibility**

Cassette	Capacity (Gigabytes)	
	Not Compressed	Compressed
TLZ04-CA	1.3	2.6
TLZ06-CA	2.0	4.0

Figure B-4 identifies the parts of a cassette tape.

**Figure B-4 Cassette Tape**



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**1** Write-Protect Switch

### B.3.1 Guidelines for Using Cassette Tapes

Use the following guidelines when using cassette tapes:

- Do not drop the tape.
- Store the tape where the room temperature is between 5°C and 32°C (40°F and 90°F) and the humidity is between 20% and 60%.
- Do not expose the tape to direct sunlight, abrasive particles, or electromagnetic fields.
- Allow tape cartridges to reach room temperature before using them.
- Store the cassette tape in its protective container, placed on its edge, or stacked. Do not stack cassette tapes more than five high.

### B.3.2 Setting the Cassette Tape Write-Protect Switch

There is a write-protect switch on one corner of the cassette tape. This switch allows you to write-protect the data on the tape. After writing data to the cassette tape, write-protect the tape to prevent accidental erasure or overwriting of that data. Use the write-protect switch as follows:

- Use a pen to slide the write-protect switch to the left (write-protect) position when you want to protect the data on the tape, or when you want to read or copy data from the tape.
- Use a pen to slide the write-protect switch to the right (write-enable) position when you want to write data to the tape.

---

**Caution**

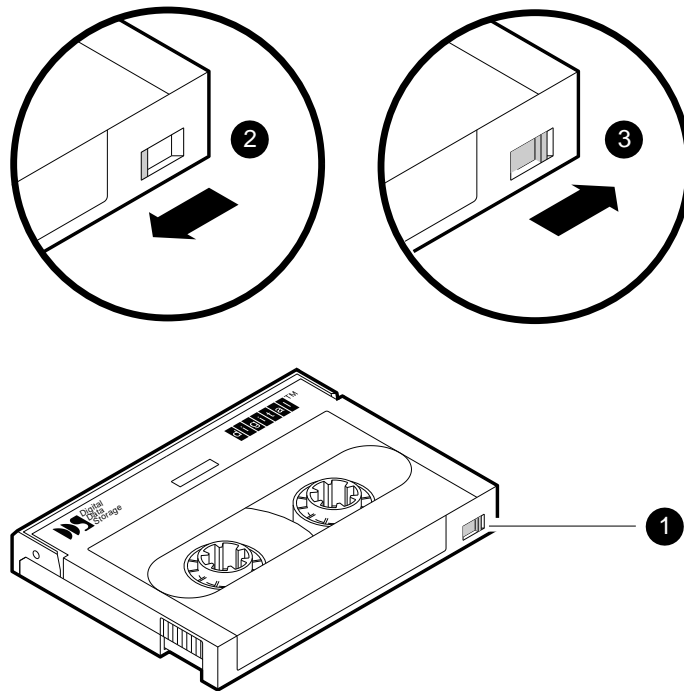
---

Do not use a pencil to slide the write-protect switch. Graphite dust can damage the cassette tape.

---



**Figure B-5** Cassette Tape Write-Protect Switch Positions



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- ❶ Write-Protect Switch
- ❷ Write-Protect Position
- ❸ Write-Enable Position

## **B.4 Diskettes**

Diskettes are magnetic disks that store information. Digital recommends that you use either high-density (HD) or extra-density (ED) diskettes. ED diskettes have a capacity of 2.88M bytes and HD diskettes have a capacity of 1.44M bytes.

Keep the diskettes dry, out of extreme temperatures and direct sunlight, and away from devices that contain magnets, such as telephones.

### **B.4.1 Writing to and Write-Protecting Diskettes**

Write-protecting a diskette prevents accidental erasure of information. The RX26 diskette drive can read information on the diskette regardless of the position of the write-protect switch. However, the system cannot write data to a write-protected diskette.

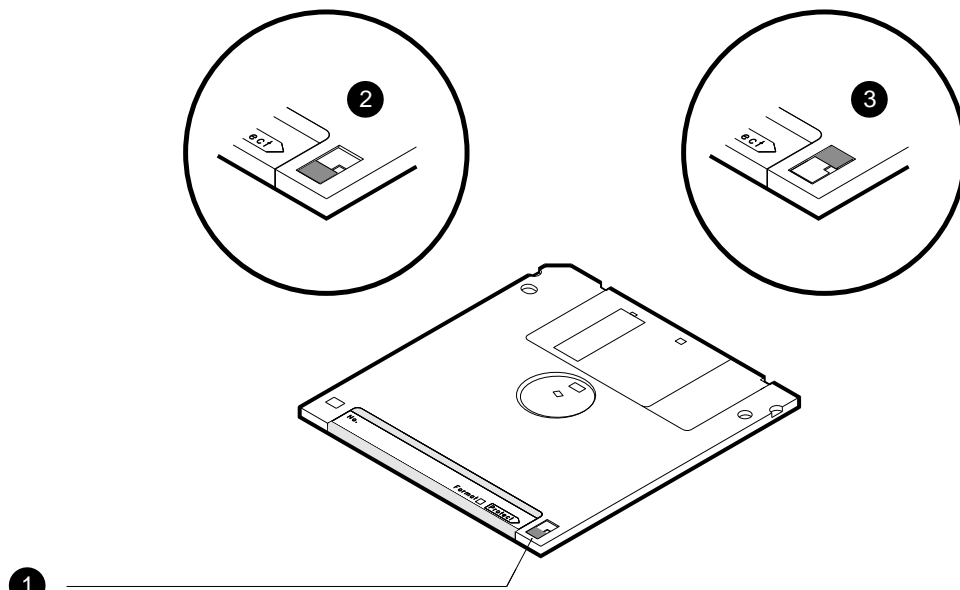
### Write-Protecting a Diskette

When you use a diskette to install application software on the system or to protect information on the diskette, set the write-protect switch on the back of the diskette to the write-protect position by moving the switch toward the edge of the diskette until it locks in place (see Figure B-6-②).

### Writing to a Diskette

When you use a diskette to make a backup copy of a file or to write data to a diskette, set the write-protect switch to enable writing to the diskette. To enable writing, set the switch to the write-enable position by moving it away from the edge of the diskette until it locks in place (see Figure B-6-③).

Figure B-6 Write-Protect Switch Positions



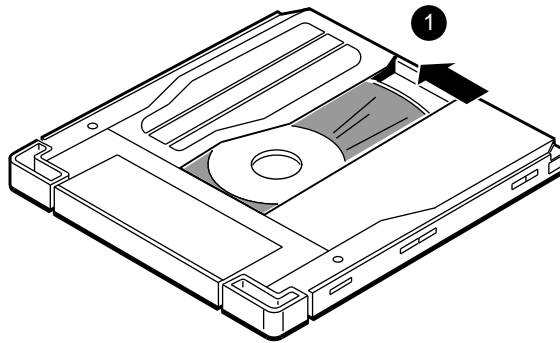
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- ① Write-Protect Switch
- ② Write-Protect Position
- ③ Write-Enable Position

## B.5 Compact Discs

When you use the RRD42 compact disc drive, you insert the disc, enclosed in a caddy, into the drive. You must take the following precautions when handling discs and caddies:

- Do not drop the disc or the caddy.
- The shutter on the caddy automatically opens when you insert it into the RRD42. Do not open the shutter manually or touch the disc.



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### ❶ Caddy Shutter

- Do not disassemble the caddy; it is precisely adjusted for use with the RRD42.
- Remove the caddy from the RRD42 before moving the MicroVAX 3100 Model 90.
- Do not expose the compact disc or caddy to any of the following:
  - High humidity
  - High temperature
  - Excessive dust
  - Direct sunlight
- Hold the compact disc by its edges; never touch the surface.
- Use a proper compact disc cleaner to wipe the compact disc if it gets dirty.

---

## Glossary

The glossary defines some of the technical terms used in this manual.

### **802.3**

An Institute of Electrical and Electronics Engineers (IEEE) standard describing the physical and data link layers of a local area network based on bus topology and Carrier Sense Multiple Access/Collision Detect (CSMA/CD).

### **backup copy**

A copy of data stored on a disk.

### **backup process**

The process of making copies of the data stored on a disk so that you can recover that data after an accidental loss. You make backup copies on tape cartridges or on another disk.

### **binary**

A number system that uses two digits: 0 and 1. They are represented in system circuitry by two voltage levels, and programs are executed in binary form.

### **bit**

A binary digit; the smallest unit of information in a binary system of notation, designated as a 0 or a 1.

### **bus**

A channel (a set of wires) along which communication signals in a computer system travel.

### **byte**

A group of 8 binary digits (bits). A byte is one-quarter of a VAX system longword.

**caddy**

The holder for inserting a compact disc into a compact disc drive.

**central processing unit**

*See* CPU.

**communications line**

A cable along which electrical signals are transmitted. Devices or systems that are connected by a communications line can share information and resources.

**console mode**

The state in which the computer is controlled from the console terminal. You can put the system in console mode by pressing the halt button on the back of the system unit. Console mode is indicated by the console prompt (>>>) on the monitor screen.

**console prompt**

A prompt used for communication between the system manager and the computer when the computer is in console mode.

**controller**

A system component, usually a printed circuit board, that regulates the operation of one or more peripheral devices.

**CPU**

Central processing unit. The part of the system that controls the interpretation and execution of instructions.

**daisy-chain**

A group of systems linked together sequentially.

**data**

A formal representation of information suitable for communication, interpretation, and processing by humans or computers.

**DECconnect**

Digital's simple, cost-effective cabling system for extending Ethernet and terminal interconnections into offices and work areas.

**DECconnect faceplate**

*See* faceplate.

**default**

A value or setting that in most cases is *normal* or *expected*.

**DEMPR**

A multipoint repeater that provides eight ThinWire Ethernet drops from a single standard Ethernet connection.

**device**

The general name for any unit connected to the system that is capable of receiving, storing, or transmitting data.

**device name**

The name by which a device or controller is identified in the system.

**diagnostics**

Programs, located in read-only memory, that detect and identify abnormal system hardware operation. (*See* ROM.)

**disk**

A flat circular plate with a coating on which data is magnetically stored in concentric circles (tracks). A disk resides permanently inside a disk drive, while a diskette is removable.

**disk drive**

A device that holds a disk. The drive contains mechanical components that spin the disk and move the read/write heads that store and read information on the surface of the disk.

**Ethernet**

A type of local area network based on Carrier Sense Multiple Access with Collision Detection (CSMA/CD).

**faceplate**

A wall receptacle that provides a single network connection for the system.

**file**

A collection of related information treated by the system as a single unit.

**format**

To prepare a disk, diskette, or tape to accept data.

**formatted data**

Data that is structured in a particular pattern to be understood by the system software.

**ground**

A voltage reference point in a system that has a zero voltage potential.

**hard disk**

A hard disk resides permanently inside a disk drive.

**hardware**

The physical components—mechanical and electrical—that make up a system. (*Compare with software.*)

**head**

The part of a fixed disk drive, diskette drive, or tape drive that reads, records, and erases data. Also called read/write head.

**IEEE**

Institute of Electrical and Electronics Engineers.

**LAN**

Local area network. A high-speed communications network that covers a limited geographical area, such as a section of a building, an entire building, or a cluster of buildings. It is a privately owned communications network whose speed is upward of 1M bits/second.

**LED**

Light-emitting diode. LEDs are used as indicators on the system enclosure.

**load**

To copy software (usually from a peripheral device) to memory. To physically place a disk in a disk drive or a tape in a tape drive.

**Local Area Network**

*See* LAN.

**Longword**

A group of four bytes.



**magnetic tape**

A tape used for storing data that is made of plastic and coated with magnetic oxide. Also called magtape.

**memory**

The area of the system that electrically stores instructions and data, often temporarily.

**memory module**

A printed circuit board that contains additional memory for the system.

**module**

A printed circuit board that contains electrical components and electrically conductive pathways between components. A module stores data or memory or controls the functions of a device.

**multiport repeater**

A repeater used to connect two or more cable segments. The repeater lets you extend Ethernet networks beyond the limits imposed by a single segment. Repeaters perform the basic actions of restoring signal amplitude, waveform, and timing amplitude to normal data and collision signals.

**network**

A group of individual computer systems that are connected by communications lines to share information and resources.

**network coordinator**

The network coordinator manages the network, assigns unique node names and addresses for each system on the network, and provides administrative assistance to network users.

**node**

An individual information-processing unit, such as a computer, workstation, or peripheral device, that is connected to a network. A node is an end point to any branch of a network or a junction common to two or more branches.

**operating system**

A collection of system programs that control the operation of the system and allow the user to access data files, input/output devices, and applications programs. The operating system software performs such tasks as assigning memory to programs and data, processing requests, and scheduling jobs.

**peripheral**

A device that provides the CPU with additional memory storage or communication capability. Examples are disk and diskette drives, video terminals, and printers.

**port**

The name of the socket or connector at the back of the computer to which a terminal, printer, or other communication devices are connected.

**printer**

A peripheral device that provides paper copies of information stored on the system.

**prompt**

Words or characters that the system displays to indicate that it is waiting for you to enter a command.

**RAM**

Random-access memory. Memory that can be both read and written to and can randomly access any location during normal operations. The type of memory that the system uses to store the instructions of programs currently being run. *Compare with* ROM.

**random-access memory**

*See* RAM.

**read-only memory**

*See* ROM.

**ROM**

Read-only memory. A memory whose contents cannot be modified. The system can use the data contained in a ROM but cannot change it. *Compare with* RAM.

**SCSI**

Small computer system interface. It is an interface designed for connecting disks and other peripheral devices to computer systems. SCSI is defined by an American National Standards Institute (ANSI) standard and is used by many computer and peripheral vendors throughout the industry.

**Small computer system interface**

*See* SCSI.

**software**

Programs executed by the system to perform a chosen or required function.  
(*Compare with* hardware.)

**standard Ethernet**

IEEE standard 802.3 compliant Ethernet network composed of standard Ethernet cable as opposed to ThinWire Ethernet cable.

**storage medium**

Any device capable of recording information; for example, a diskette.

**store**

To enter data into a storage device, such as a disk, or into memory.

**system**

A combination of system hardware, software, and peripheral devices that perform specific processing operations.

**tape drive**

A device that contains mechanical components and holds, turns, reads, and writes on magnetic tape.

**tape leader**

A plastic leader at the beginning of magnetic tape.

**tape lever**

This lever sets internal TZ30 mechanisms to accept or eject the tape cartridge. Move the lever to the left to insert a tape, move to the right so the tape can be used, and move to the left again to eject the cartridge after the tape has been completely rewound.

**T-connector**

Connector used to join ThinWire Ethernet cable sections. The connector also has a connector that is attached directly to a system.

**terminal**

An input/output device that lets you communicate with the system. Terminals are divided into two categories: video and hard-copy.

**terminator**

A connector used on one or both ends of an Ethernet segment that provides the 50-ohm termination resistance needed for the cable.

**ThinWire**

A Digital trademark used to describe its 10 base 2 (IEEE standard 802.3 compliant) Ethernet products used for local distribution of data.

**ThinWire connector**

The connector on the back of the system unit to which the ThinWire Ethernet cable is attached.

**transceiver**

A device that provides a single physical connection between standard Ethernet and Ethernet communication equipment.

**unload switch**

A switch on the front of the TZ30 tape drive that rewinds and unloads the tape.

**VMS**

Digital's proprietary operating system.

**write-protect**

To protect a disk, diskette, or other storage medium from the addition, revision, or deletion of information.

**write-protect switch**

The switch that you set on tapes, cartridges, or diskettes to prevent loss of data by accidental overwriting.

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