

# VAXstation 3100 Model 30

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## Owner's Manual

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**January 1989**

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| CompacTape | DEMPR                  | ReGIS                 | VAXstation                  |
| DDIF       | DIGITAL                | Remote System Manager | VMS                         |
| DEC        | LA75 Companion Printer | ThinWire              | VT                          |
| DECconnect | LN03                   | ULTRIX                | XUI                         |
| DECnet     | LN03R ScriptPrinter    | UNIBUS                |                             |
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# About This Manual

## Purpose of This Manual

This manual describes how to install, test, and maintain the hardware components of a VAXstation 3100 Model 30 system. This manual also includes information on how to configure and connect your new system to an Ethernet network.

## Who Should Use This Manual

This manual is for anyone setting up and using the VAXstation 3100 workstation for the first time.

## Structure of This Manual

This manual contains six chapters, five appendixes, a glossary of technical terms, and an index.

- Chapter 1 includes an overview of the VAXstation 3100 workstation and the associated VAXstation 3100 family of products. It includes an illustration of a VAXstation 3100 system configuration, and introduces you to some of the features of the product.
- Chapter 2 shows how to install your new VAXstation 3100 Model 30.
- Chapter 3 discusses how to use your VAXstation 3100 Model 30, including how to use the diskette drive and the TZ30 tape drive. It concludes with a short discussion of the keyboard and mouse.
- Chapter 4 describes how to add and use expansion boxes for your system.

- Chapter 5 tells you how to connect your system to a simple ThinWire daisy-chain network, as well as to standard Ethernet.
- Chapter 6 provides troubleshooting information.
- Appendix A tells you how to set your startup procedures, including how to reboot your system and change the default recovery action.
- Appendix B shows how to set the SCSI IDs on your expansion boxes for optimal performance.
- Appendix C lists the options available for your system. It also shows how to connect a printer or modem to your system.
- Appendix D provides hardware specifications for system components.
- Appendix E lists additional documents to help you get acquainted with your new system.
- The glossary explains technical terms used in the manual.
- The index can help you find the information you need.

# Guide to VAXstation 3100 Documentation



The manuals you will use to install and operate your VAXstation 3100 system are shown in the following table. The left column lists the manuals. The right column gives the type of tasks and information contained in each manual.

| <b>Manual</b>  | <b>Task</b>  |
|--|--|
| <b>VAXstation 3100 Planning and Preparation</b>                | Planning your office   |
| <b>VAXstation 3100 Owner's Manual</b>                          | Setting up the system unit<br>Connecting the keyboard and mouse  |
| <b>Monitor Installation/Owner's Guide</b>                      | Connecting a monitor to your system unit<br>Adjusting your monitor's brightness and contrast   |
| <b>VAXstation 3100 Owner's Manual</b>                          | Turning your system on<br>Setting the keyboard language<br>Connecting to a network<br>Creating simple networks<br>Adding storage devices |
| <b>VMS Installation Guide or<br/>ULTRIX Installation Guide</b> | Installing operating system software<br>Backing up files   |
| <b>DECwindows User's Guide or<br/>VWS Installation Guide</b>   | Using the mouse<br>Manipulating windows<br>Creating and using files  |
| <b>Application Installation Guides</b>                         | Installing applications  |

# Conventions

The following conventions are used in this guide:

| Convention       | Meaning  |
|------------------|--|
| <b>Ctrl/x</b>    | A sequence such as <b>Ctrl/x</b> indicates that you must hold down the key labeled Ctrl while you press another key. |
| <b>Return</b>    | A key name is shown enclosed to indicate that you press a key on the keyboard.                                       |
| blue-green ink   | Blue-green ink in interactive examples indicates information that you must enter from the keyboard.                  |
| <b>boldface</b>  | Boldface type represents the introduction of a new term. New terms are defined in the Glossary.                      |
| <b>UPPERCASE</b> | Uppercase letters in interactive examples indicate that you must enter a command. For example, enter<br><b>SHOW</b>  |
| lowercase        | Lowercase letters in interactive examples indicate that you must provide a value.                                    |
| <b>Warning</b>   | Warnings contain information to prevent personal injury. Read these carefully.                                       |
| <b>Caution</b>   | Cautions provide information to prevent damage to equipment or software. Read these carefully.                       |
| <b>Note</b>      | Notes provide general information about the current topic.   |



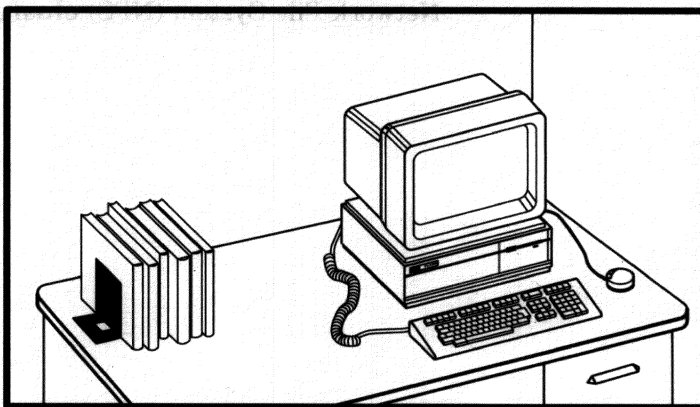
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## Your VAXstation 3100 Model 30

This chapter describes some of the features of the VAXstation 3100 (Figure 1-1).

The VAXstation 3100 is a low-cost desktop system that offers all the advantages of DIGITAL's VAX architecture. The VAXstation 3100 provides an integrated computing environment that offers desktop VAX computing, industry-standard personal productivity tools, and transparent access to distributed **applications** and resources.

**Figure 1-1** VAXstation 3100 System



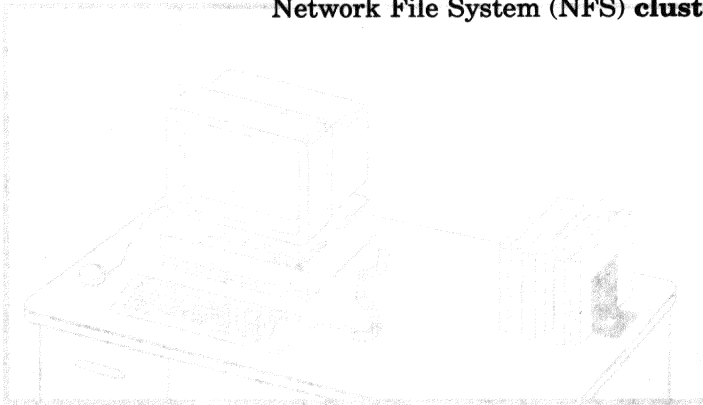
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## System Highlights

- The VAXstation 3100 provides you with an integrated computing environment that offers the best of **timesharing** and local or distributed **applications**.
- The compact, three-piece desktop package minimizes desktop **footprint**.
- Your system supports up to 32 **megabytes of memory**.
- You can choose either **VMS** or **ULTRIX** operating system software.
- Your VAXstation 3100 supports the VWS/UIS or the DECwindows **user interface**.

The **DECwindows** interface is based on the **X Window System** industry standard. This means that all applications written for your VAXstation 3100 environment will give you a consistent style of interaction, thus reducing learning time and reducing errors.

- **SCSI**, or Small Computer Systems Interface, connectivity is an industry standard for connecting mass storage devices. Your SCSI (pronounced "skuh-zee") port permits you to connect DIGITAL's and other manufacturers' devices to your workstation.
- Your system is equipped with both standard and ThinWire Ethernet ports for connection to a DECnet **network** or Network File System (NFS) **cluster**.



## The VAXstation 3100 Family

The VAXstation 3100 family members range from the Model 30 diskless workstation used as a satellite on a local area VAXcluster or a LAN, or a workstation with two hard disks each holding 104 megabytes of data, to a Model 40 server for one or more VAXstation 3100 workstations.

The Model 30 **diskless** satellite workstation is the basic, introductory system.

The Model 30 **satellite** workstation with paging and swapping has a hard disk, holding 52 megabytes of data. It also comes with a diskette drive, which uses 1.2 megabyte diskettes.

The VAXstation 3100 Model 30 gives you the option of working on your own or connecting to a network.

## The VAXstation 3100 Family

The VAXstation 3100 family members range from the Model 30 diskless workstation used as a satellite on a local area VAXcluster or a LAN, or a workstation with two hard disks each holding 100 megabytes of data for a Model 40 server for use on more VAXstation 3100 workstations.

The Model 50 diskless satellite workstation is the basic introductory system.

The Model 60 satellite workstation with paging and swapping has a hard disk holding 60 megabytes of data. It also comes with a diskette drive, which stores 1.44 megabyte diskettes.

The VAXstation 3100 Model 70 gives you the option of working on your own or connecting to a network.

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## Installing Your System

After helping you check that you have all your equipment, and the right location for your system, this chapter shows how to set up your system, including:

- Connecting the keyboard
- Connecting the mouse
- Attaching Ethernet terminators to prepare either for networking or diagnostic tests
- Connecting the monitor
- Connecting the power cords
- Starting your system

The chapter goes on to show you everything you need to do to get your system up and running, including:

- What to do if you are planning to connect to a network
- How to go about installing your operating system and windowing environments

## Choosing the Right Location

Use the following checklist to keep your VAXstation 3100 operating at its best:

- Keep the temperature between 10° and 40°C (50° and 104°F) and the relative humidity between 10% and 95%. Tape cartridges should also be stored at this relative humidity.
- Keep the air well circulated to prevent excess heat and dust from accumulating.
- Keep your equipment away from heaters, photocopiers, direct sunlight, and abrasive particles.
- Before you set up your system, select a surface that is large enough to hold a monitor, a system unit, and a keyboard and mouse. Your desk or work table is a good choice. If you need to, you can place your system unit on a shelf. To place your system on a shelf, you will need to order a long monitor cable.
- You will be more comfortable if you place the monitor so that the top line of the monitor display is at eye level.
- To avoid screen glare, pick a place where bright light will not reflect off the monitor.
- Keep the area clean. Do not place food or liquid on or near your equipment, and do not place your system unit directly on the floor. Dust and dirt will damage the system components.
- Keep air vents clear on each side of the system unit for proper ventilation.
- Do not place the system unit on its side. Blocking the air vents can cause the system unit to overheat.

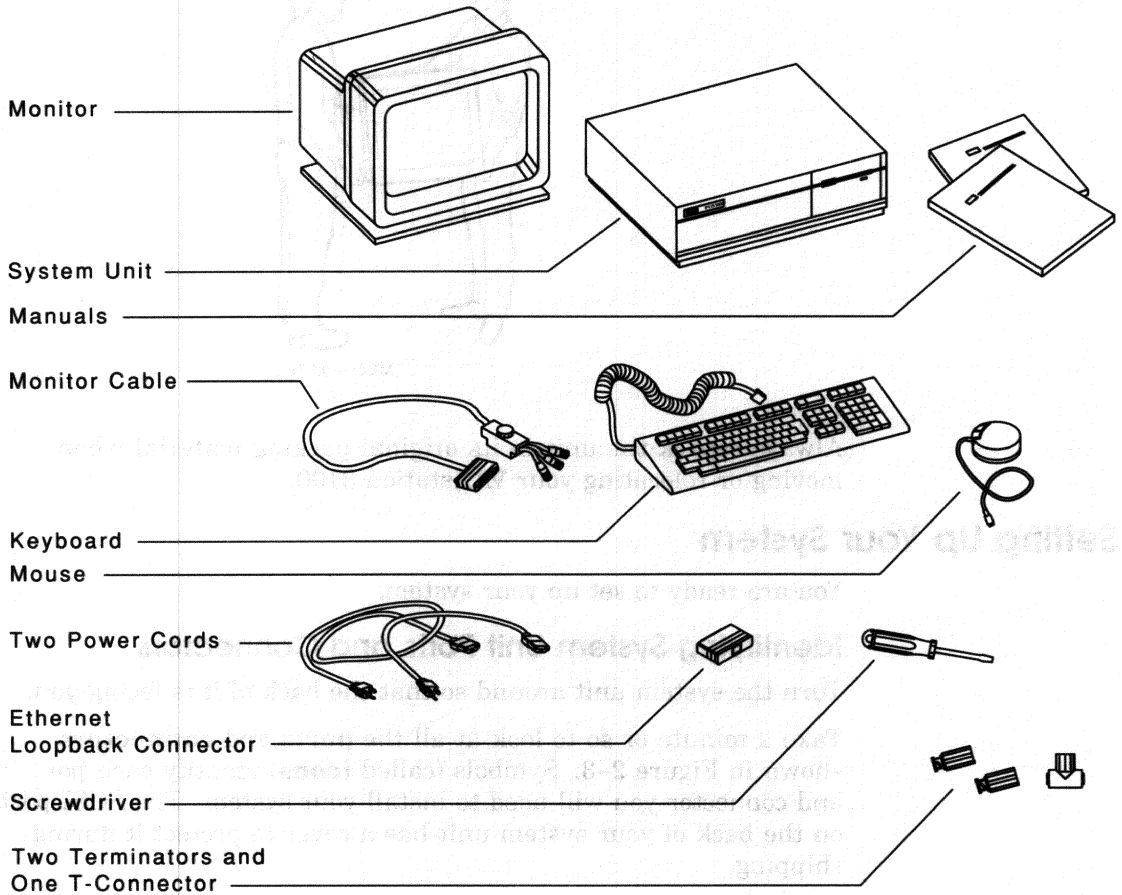
**Warning** *Connect your computer to a grounded outlet.*

- If you have several pieces of equipment that need to be plugged into an electrical outlet, use a grounding power strip. Many power strips come with an on/off switch and a surge protector (which acts like a circuit breaker).
- To avoid damaging equipment that has been moved inside from a cold environment, let the equipment warm to room temperature before you turn it on.
- Finally, carefully read all installation instructions before you turn on the power.

# Unpacking

Make sure you have all the parts listed on the packing slip before you set up your system. The contents of each of your boxes may differ from those shown in Figure 2-1 depending on what you order.

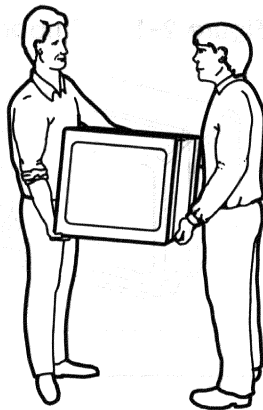
**Figure 2-1 Unpacking**



MLO-001874

**Caution** Because of the weight of the system unit and the monitor, two people should lift the equipment out of the cartons and place it on a work surface.

**Figure 2-2 Lifting Equipment**



MLO-001783

Always repack the unit in its original packing material when moving or relocating your VAXstation 3100.

## Setting Up Your System

You are ready to set up your system.

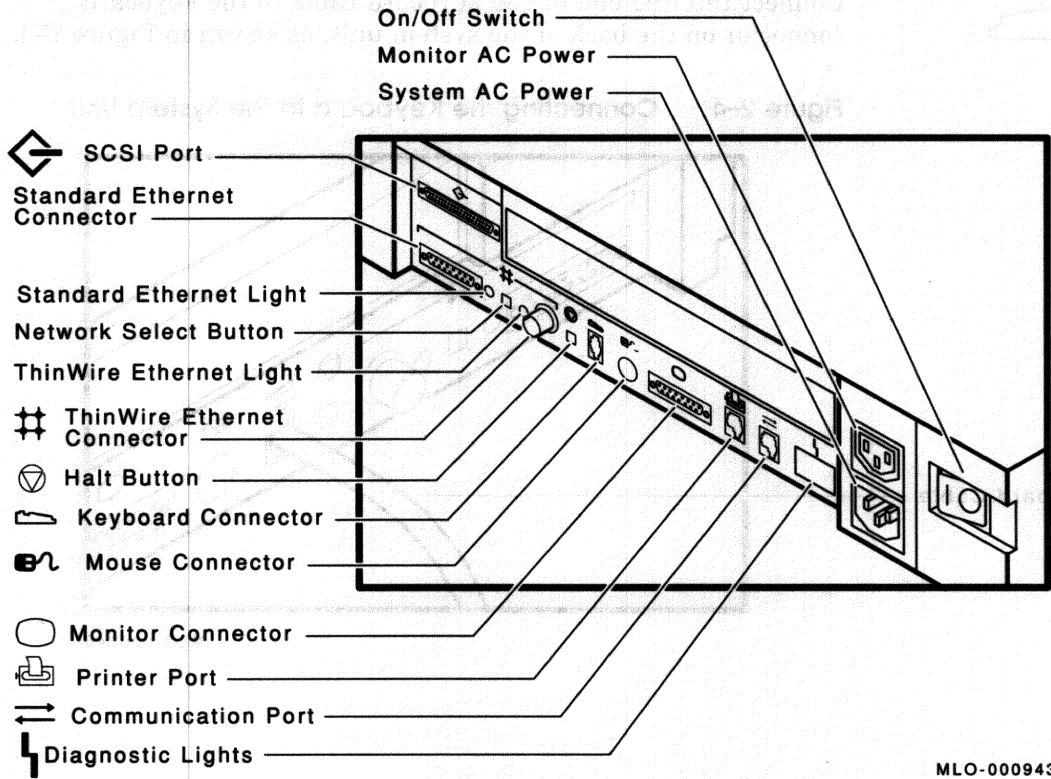
### Identifying System Unit Ports and Connectors

Turn the system unit around so that the back of it is facing you.

Take a minute or so to look at all the **ports** and **connectors** shown in Figure 2-3. Symbols (called **icons**) identify each port and connector you will need to install your system. The SCSI port on the back of your system unit has a cover to protect it during shipping.



**Figure 2-3 System Unit Ports and Connectors**



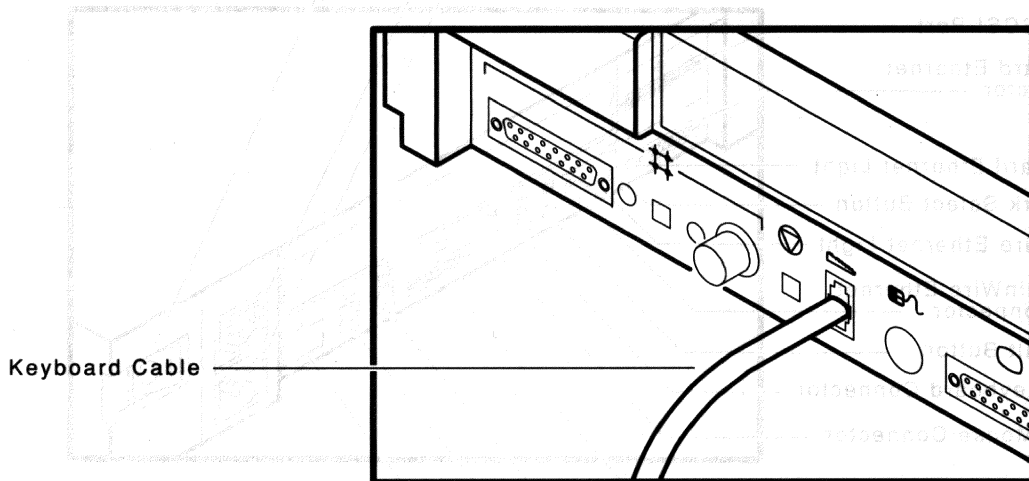
MLO-000943

If you have a diskless system, your system will not have the SCSI port shown in Figure 2-3.

## Connecting the Keyboard

Connect the free end of the keyboard cable to the keyboard connector on the back of the system unit, as shown in Figure 2-4.

**Figure 2-4** Connecting the Keyboard to the System Unit



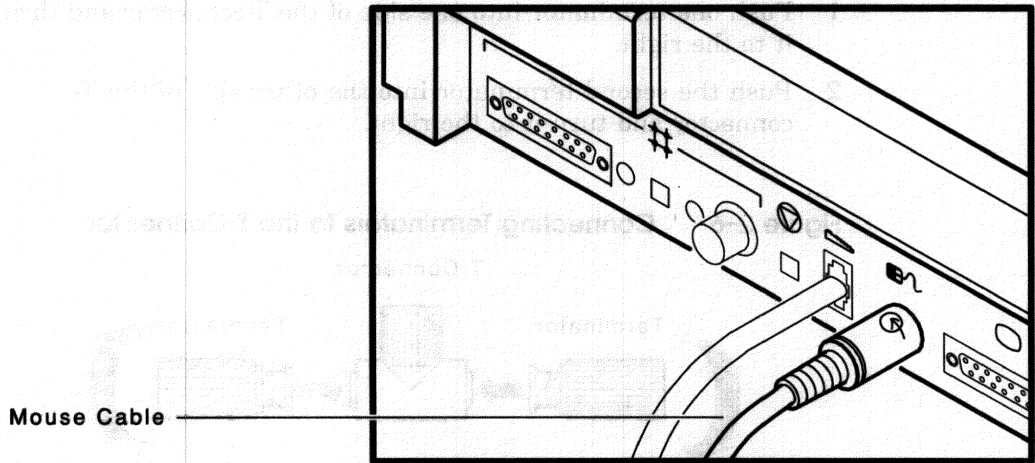
MLO-000945



## Connecting the Mouse

Connect the free end of the mouse cable to the mouse connector on the back of the system unit, as shown in Figure 2-5.

**Figure 2-5** Connecting the Mouse to the System Unit



MLO-001009

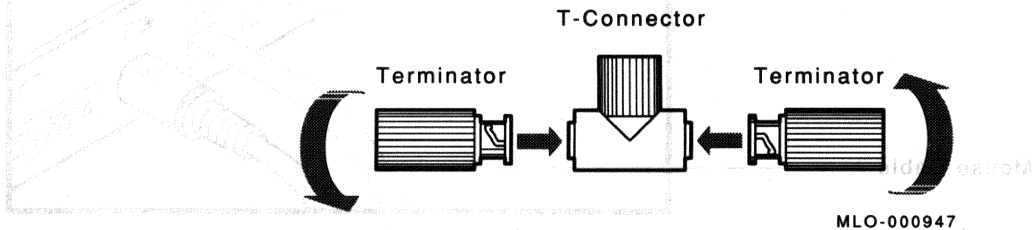
## Attaching Ethernet Terminators

You will need to connect the T-connector with two terminators and the loopback connector to the system unit to complete the diagnostic test later in this chapter.

To connect the two terminators to the T-connector (Figure 2-6):

- 1 Push one terminator into one side of the T-connector and turn it to the right.
- 2 Push the second terminator into the other side of the T-connector and turn it to the right.

**Figure 2-6** Connecting Terminators to the T-Connector

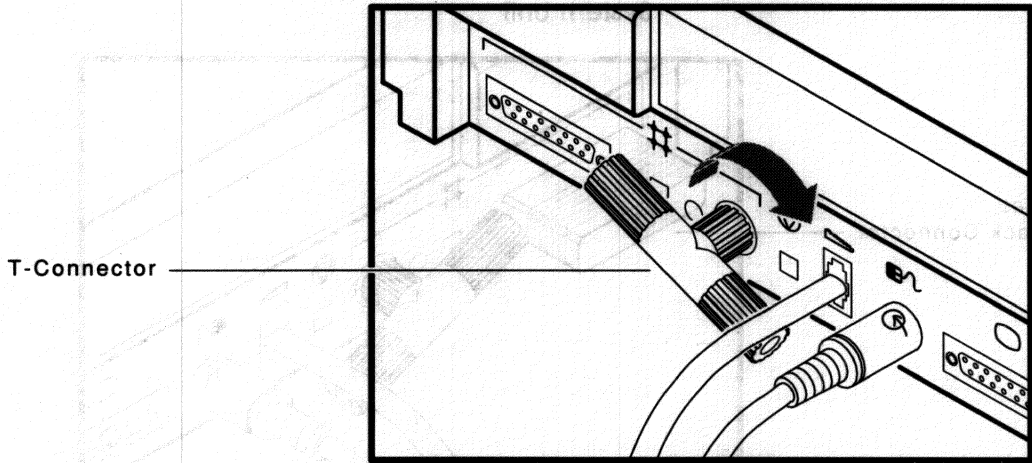


Here the T-connector is used with two terminators to complete the ThinWire Ethernet circuit for diagnostic purposes. Later, if you decide to connect to a network, you will exchange ThinWire cable sections for one or both terminators, depending on your network setup. The loopback connector completes the standard Ethernet circuit for diagnostic purposes.



- 3 Next, connect the T-connector to the ThinWire Ethernet connector on the back of the system unit and turn the ribbed barrel to the right, as shown in Figure 2-7.

**Figure 2-7** Connecting the T-Connector to the System Unit

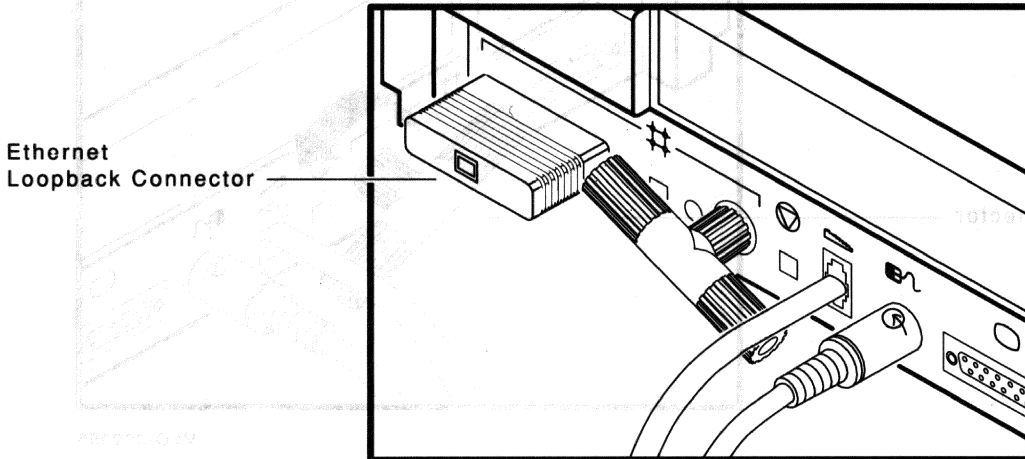


MLO-002055

- 4 Turn the T-connector at an angle to make room for the loopback connector.

5 Connect the loopback connector to the standard Ethernet connector on the back of the system unit, as shown in Figure 2-8.

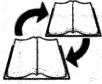
**Figure 2-8** Connecting the Loopback Connector to the System Unit



MLO-000951

## Connecting the Monitor

You can put the monitor beside the system unit or on top of it. To place your monitor away from the system unit, you need to order a long monitor cable (see Appendix C).



The installation of any of the monitors available for your system is fundamentally the same. Keep the monitor installation/owner's guide that comes with the monitor you ordered nearby. Your monitor guide contains instructions for:

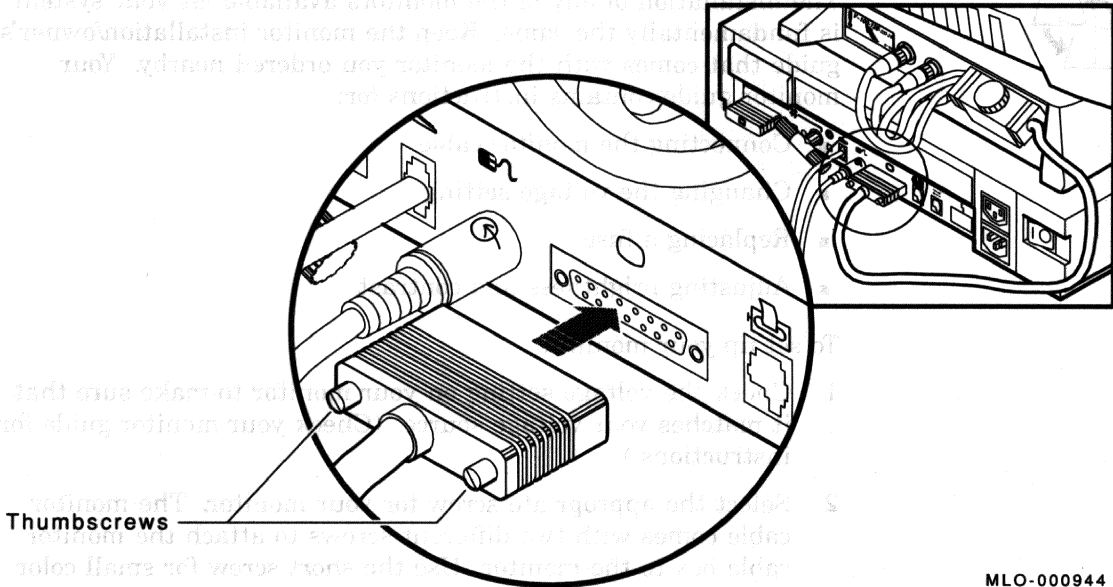
- Connecting the monitor cable
- Changing the voltage setting
- Replacing a fuse
- Adjusting brightness and contrast

To set up your monitor:

- 1 Check the voltage setting on your monitor to make sure that it matches your voltage source. (Check your monitor guide for instructions.)
- 2 Select the appropriate screw for your monitor. The monitor cable comes with two different screws to attach the monitor cable box to the monitor. Use the short screw for small color monitors. All other monitors use the long screw.
- 3 Push the screw into the monitor cable box.
- 4 Follow the directions in the monitor guide to connect the monitor cable box to the monitor. Do not connect the keyboard and mouse to the monitor cable box. (You have already connected the keyboard and mouse to the system unit.)

- 5 Connect the free end of the monitor cable to the back of the system unit, as shown in Figure 2-9.

**Figure 2-9 Connecting the Monitor Cable to the System Unit**



MLO-000944

- 6 Tighten the thumbscrews on the monitor connector by turning them to the right.



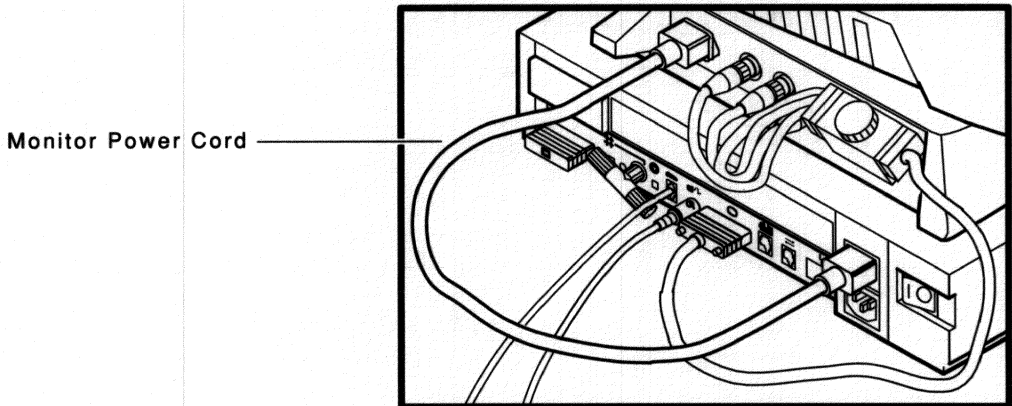
## Connecting the Power Cords

Two power cords come with your system. Use the short power cord to connect the monitor to the system unit. Use the long power cord to plug your system into an electrical wall outlet.

The power cord is an electrical ground for your system unit and monitor. To connect the monitor and system unit to a power source, perform the following steps:

- 1 Make sure that the monitor and the system unit are off (0).
- 2 Remove the yellow sticker on the back of the monitor to expose the power receptacle, set to the right voltage.
- 3 Check that voltage setting on your monitor and change it, if necessary.
- 4 Connect one end of the short power cord to the monitor and plug the other end of the power cord into the monitor AC power outlet on the system unit, as shown in Figure 2-10.

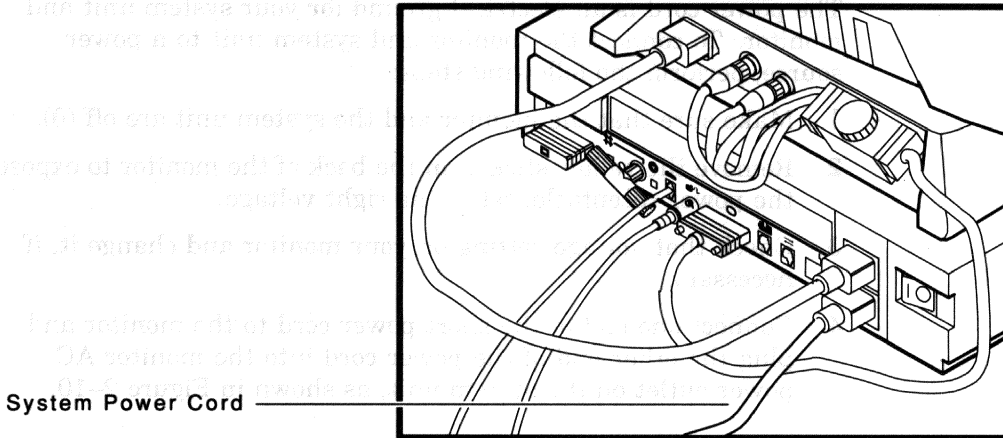
**Figure 2-10** Connecting the Monitor Power Cord



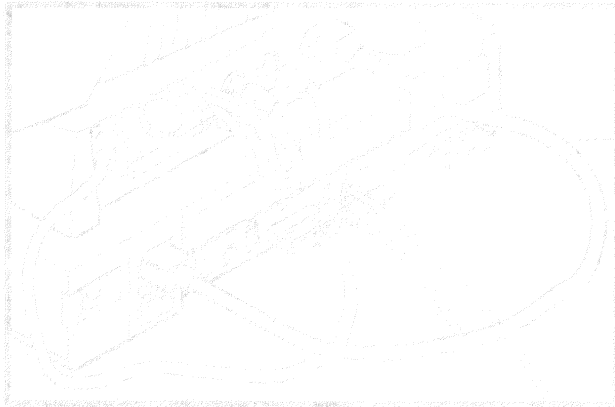
MLO-000952

- 5 Connect the long system power cord to the system unit and plug the other end into a grounded electrical wall outlet.

**Figure 2-11 Connecting the System Power Cord**



MLO-001776



## Starting Your System



To start your system, set the on/off switches on your equipment to 1 (on), in the order given in the following list.

1 Turn expansion boxes on (1) in the following order:

- RZ55 hard disk expansion box
- TK50Z tape expansion box
- RRD40 compact disc expansion box

To learn how to connect expansion boxes, see Chapter 4.

2 Turn the printer and modem on (1), if you have this equipment.

To learn how to connect printers and modems, see Appendix C.

3 Turn the monitor on (1).

Leave the monitor on so that the monitor turns on and off with the system unit.

4 Turn the system unit on (1).

It will take approximately one and a half minutes for the first line of the power-up display to appear.

This is a good time to adjust the brightness and contrast of your monitor. Your screen may look blank because the brightness and contrast may be turned down too low. Follow the directions in your monitor guide to set the brightness and contrast.

### Checking the Power-Up Display

When you turn on the system unit, a power-up display comes up on the monitor screen.

If you see a display similar to any of the following, your system has passed all power-up tests:

**KA42-A V1.0**

**F...E...D...C...B...A...9...8...7...6...5...4...3\_2\_1.**

**? E 0040 0000.0005**

**Power-Up Display for System Without Diskette Drive** If you have a system without a diskette drive, you see a display similar to the following. This display means that your system has passed all power-up tests:

KA42-A V1.0

F...E...D...C...B...A...9...8...7...6...5...4...3...2...1..

? E 0040 0000.0005  
 ? D 0050 0000.0005

| VMS/VMB       | ULTRIX | ADDR              | DEVTYP | NUMBYTES | RM/FX | WP | DEVNAM |  |
|---------------|--------|-------------------|--------|----------|-------|----|--------|--|
| ESA0          | SE0    | 08-00-2B-07-E3-83 |        |          |       |    |        |  |
| DKA300        | RZ3    | A/3/0/00          | DISK   | 104 MB   | FX    |    | RZ23   |  |
| ...HostID.... |        | A/6               | INITR  |          |       |    |        |  |
| DKB200        | RZ10   | B/2/0/00          | DISK   | 104 MB   | FX    |    | RZ23   |  |
| ...HostID.... |        | B/6               | INITR  |          |       |    |        |  |

[ESA0] ? >>>

**Power-Up Display for System with Diskette Drive** If you have a system with a diskette drive, a display similar to the following appears on your monitor. This display means that your system has passed all power-up tests:

KA42-A V1.0

F...E...D...C...B...A...9...8...7...6...5...4...3...2...1..

? E 0040 0000.0005  
 ? D 0050 0000.0005

| VMS/VMB       | ULTRIX | ADDR              | DEVTYP | NUMBYTES | RM/FX | WP | DEVNAM |  |
|---------------|--------|-------------------|--------|----------|-------|----|--------|--|
| ESA0          | SE0    | 08-00-2B-07-E3-83 |        |          |       |    |        |  |
| DUA2          | RX2    |                   | DISK   |          | RM    |    | RX23   |  |
| ...HostID.... |        | A/6               | INITR  |          |       |    |        |  |

[ESA0] ? >>>

Press **Ctrl/C** to continue. That is, hold down the Ctrl key while you press the c key.

## If You Have Problems

If you do not see one of the power-up displays, turn off your system unit and review each installation step. Repeat the power-up procedure.

## Setting the Keyboard Language

When you receive your system, the keyboard language should be set for the keyboard you ordered.

If the following display appears when you press **Ctrl/C**, you need to set your keyboard language:

- |                            |                              |
|----------------------------|------------------------------|
| 0) Dansk                   | 8) Français (Suisse Romande) |
| 1) Deutsch                 | 9) Italiano                  |
| 2) Deutsch (Schweiz)       | 10) Nederlands               |
| 3) English                 | 11) Norsk                    |
| 4) English (British/Irish) | 12) Português                |
| 5) Español                 | 13) Suomi                    |
| 6) Français                | 14) Svenska                  |
| 7) Français (Canadien)     | 15) Vlaams                   |

3? >>>

To set the keyboard language:

- 1 Select a language from the keyboard language menu to match the type of keyboard you have.
- 2 If you want to select the default (English, or option 3), press the Return key. Otherwise, enter the number of the language that matches the language of your keyboard, and press the Return key.

A different keyboard is supplied for each language. If you do not know the language variation of the keyboard you received, check the packing list.

The language you choose is saved in memory, so you only have to set the keyboard language the first time you turn on the system. If you need to change the keyboard language later, Chapter 6 shows you how.

## Connecting to a Network

If you are connecting your system to a network, read Chapter 5 and install your network hardware before you install your operating system software.

## Installing Your Operating System

To install your VMS or ULTRIX operating system software, you need one of the following:

- TZ30 tape drive
- Connection to a network to load the software from another system
- RRD40 compact disc expansion box
- TK50Z tape expansion box

To learn how to set your system up so that your operating system automatically starts, see Appendix A.

To install VMS or ULTRIX software on the VAXstation 3100, follow the operating system installation instructions shipped with the software. During software installation, you transfer operating system software from the installation media to a hard disk in your VAXstation 3100 or to an expansion box.

If you are a member of a local area VAXcluster, you access operating system software from your server.

## Turning Off Your System



If you need to turn your system off (0), follow the shutdown instructions in your operating system software documentation. After shutting down the system, turn off your equipment in the following order:

- 1 Other equipment, such as a printer or modem
- 2 Expansion boxes
- 3 System unit

---

## Learning About Your System

This chapter shows how to use:

- The RZ22 and RZ23 hard disk drives
- Tape cartridges
- The TZ30 tape drive
- The RX23 diskette drive
- The keyboard and mouse

### Hard Disk Drives

A **hard disk drive** stores information on a nonremovable **disk**. Disks store information and come in different sizes. You can have one or two 3.5-inch RZ22 or RZ23 hard disk drives in your system unit.

- The RZ22 hard disk drive stores 52 megabytes of information.
- The RZ23 hard disk drive stores 104 megabytes of information.

You can increase your system's storage capacity with hard disk expansion boxes. See Chapter 4 to learn about these add-on drives.

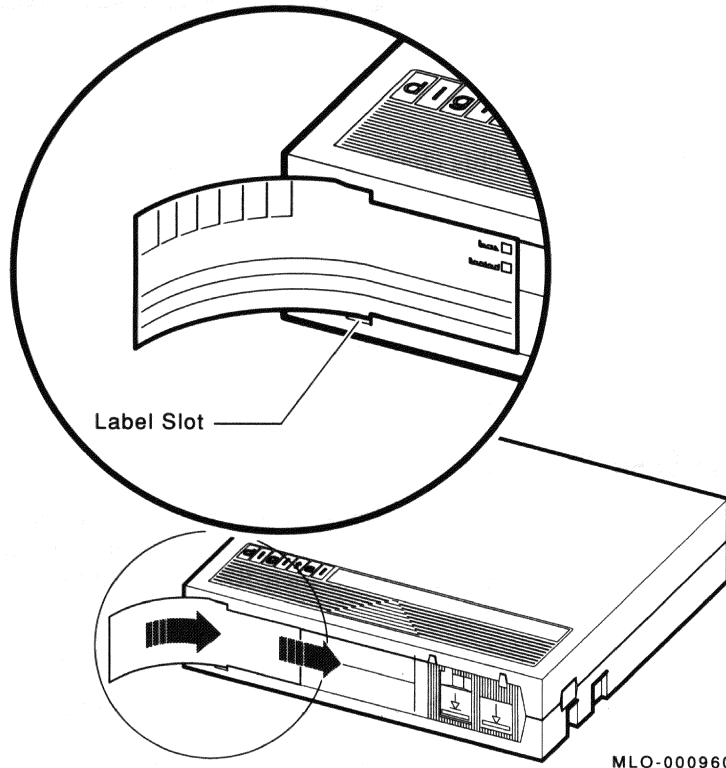
### Tape Cartridges

The TZ30 tape drive uses TK50K or TK52K (CompacTape) tape cartridges.

## Labeling a Tape Cartridge

Always label tape cartridges. A slot for the label is provided on the front of the cartridge, as shown in Figure 3-1. This label is visible when the cartridge is in the drive. Labels or markings on any other part of the cartridge can interfere with proper operation of the drive. Do not write directly on the cartridge with pen, pencil, or other marking medium.

Figure 3-1 Labeling a Tape Cartridge



## Writing to and Protecting Tape Cartridges

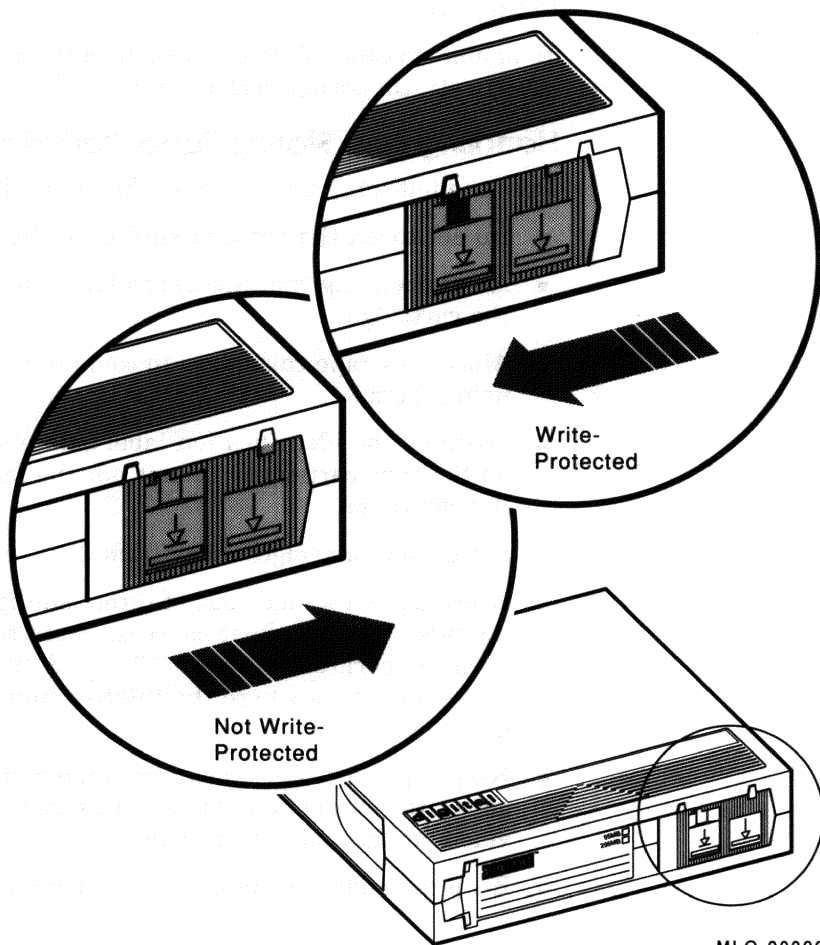
Write-protecting a tape prevents accidental erasure of information. The VAXstation 3100 can read information on the tape regardless of the position of the **write-protect switch**. However, the VAXstation 3100 cannot write data to a write-protected tape.



**Write-Protecting a Tape** When you use a tape to install software on the VAXstation 3100, set the write-protect switch on the front of the cartridge to the write-protect position.

To write protect a tape, slide the write-protect switch left toward the label until it locks in place (Figure 3-2). An orange rectangle appears when the write-protect switch locks in the write-protect position.

**Figure 3-2 Write-Protecting a Tape**



MLO-000961

If you move the write-protect switch to the right during operation, the system software does not recognize that the tape is no longer write-protected. You must unload the software and then reload it before the software recognizes the cartridge as write-enabled.

Similarly, if you move the write-protect switch to the left during operation, the tape is not write-protected until the current command executes.

**Writing to a Tape** When you use a tape to make a **backup copy** or to write out data, set the write-protect switch to enable writing to the tape.

To enable writing, slide the switch to the right, away from the label, until the switch locks in place.

## Handling and Storing Tape Cartridges

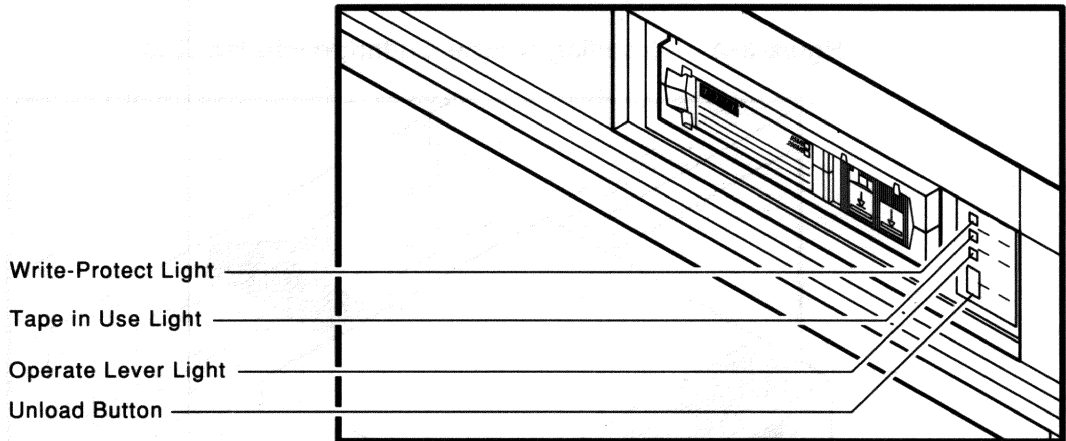
Take the following precautions when handling and storing tapes:

- Do not touch the exposed surface of the tape.
- Avoid dropping the tape cartridge. The impact can damage the cartridge.
- Allow new tape cartridges to come to room temperature before using them.
- Write on the identification label before sliding it into the slot on the tape cartridge. Do not put the label anywhere else on the cartridge.
- Store tape cartridges away from dust in their plastic covers.
- Keep tape cartridges out of direct sunlight and away from heaters and other heat sources. Store tape cartridges at an even temperature between 10°C and 40°C (50°F and 104°F). Store cartridges where the relative humidity is between 20% and 80%.
- Keep tape cartridges away from magnets and equipment that generates magnetic fields, such as motors, transformers, and video monitors and terminals.
- Keep cartridges away from x-ray equipment.

## TZ30 Tape Drive

The TZ30 tape drive holds one removable magnetic tape cartridge. The tape cartridge stores up to 95 megabytes of data. Use the tape cartridge to load software or data or to make copies (or backups) of software or data. Figure 3-3 shows the position of the TZ30 lights and controls.

**Figure 3-3 TZ30 Lights and Controls**



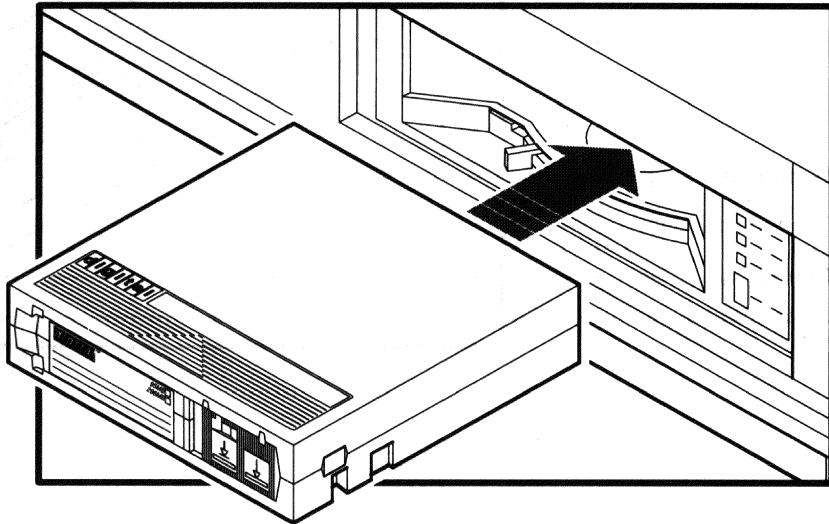
MLO-001866

## Inserting a Tape Cartridge

To use the tape drive:

- 1 Make sure the system unit is on.
- 2 The TZ30 operate lever light (green) comes on and a beep sounds.
- 3 Make sure the lever is to the left in the open position.
- 4 Insert the tape cartridge, as shown in Figure 3-4.

**Figure 3-4** Inserting a Tape Cartridge into the TZ30



MLO-000962

- 5 With the cartridge all the way in, slide the lever to the closed position, all the way to the right. The green light goes off and the yellow (tape-in-use) light blinks, indicating that the tape is loading.

When the tape is loaded (ready for use), the yellow light stays on continuously. Whenever the yellow light is on continuously and it is the only light on, the tape is ready to use.

When the tape is being read, written to, or rewound, the yellow light blinks.

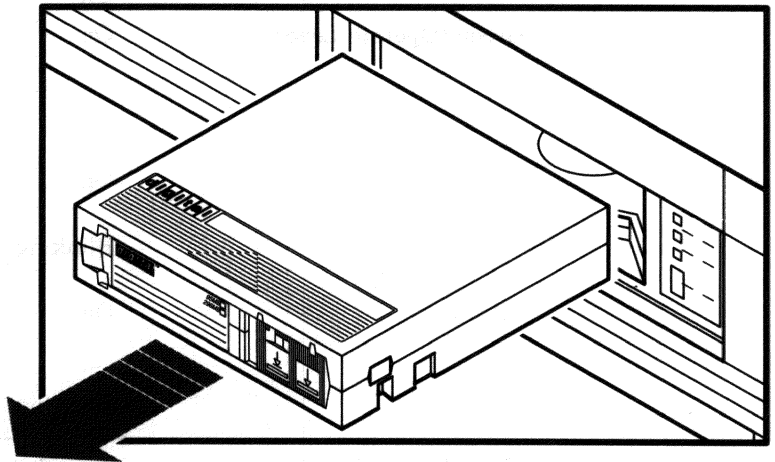
**Note** *If the write-protect switch on the cartridge is in the protected position, the orange write-protect light on the front of the tape drive comes on and you will be unable to write data to the tape.*

## Removing a Tape Cartridge

- 1 Press the unload button. Wait approximately 2 minutes for the tape to rewind.
- 2 When the green light comes on and the beep sounds, slide the lever to the open position (to the left). The cartridge ejects. Remove the cartridge, as shown in Figure 3-5.

**Caution** *A tape cartridge must be removed from the drive before the drive is turned off. Failure to remove the cartridge can result in damage to the cartridge and to the drive.*

**Figure 3-5** Removing a Tape Cartridge from the TZ30



MLO-000963

## Summary of TZ30 Lights

Table 3-1 gives you a summary of the status lights on the TZ30 tape drive.

**Table 3-1 Summary of TZ30 Lights**

| Light                  | State                 | Meaning  |
|------------------------|-----------------------|--|
| Orange (Write-Protect) | On                    | Tape write-protected   |
|                        | Off                   | Tape write-enabled   |
| Yellow (Tape in Use)   | Blinking <sup>1</sup> | Tape in use  |
|                        | On                    | Tape ready for use   |
| Green (Operate Lever)  | On                    | Ready to load (move lever to right) or unload (move lever to left) |
|                        | Off                   | Do not operate lever   |
|                        | Blinking              | Cartridge error detected   |
| All three              | On <sup>2</sup>       | Power-up diagnostic test running                                   |
|                        | Blinking              | Drive fault  |

<sup>1</sup>Fast blinking (four times a second) indicates that a read or write is in progress. Medium blinking (two times a second) indicates that the tape is loading or unloading. Slow blinking (once a second) indicates that the tape is rewinding.

<sup>2</sup>All three lights stay on for a few seconds, while the power-up diagnostic test is running. If all three lights stay on for a long time, it means that the power-up diagnostic test has failed. See Table 6-1.

## If You Have Problems

If an error occurs when you are reading or writing to a tape, all three lights blink. If an error occurs when you are inserting the tape cartridge, the green light blinks and the tape does not move. If this happens, see Table 6-1 for troubleshooting information.

## RX23 Diskette Drive

The RX23 diskette drive installed in your system unit provides you with 1.2 megabytes of storage space on RX23K diskettes.

### Diskettes

Diskettes are magnetic disks that store information the same way a hard disk does, though their storage capacity is considerably less. They are easy to insert into your VAXstation 3100, easy to remove, and easy to store. DIGITAL recommends that you use high-density (HD) diskettes.

Keep your diskettes dry, out of extreme temperatures and direct sunlight, and away from anything that contains a magnet, such as a telephone.

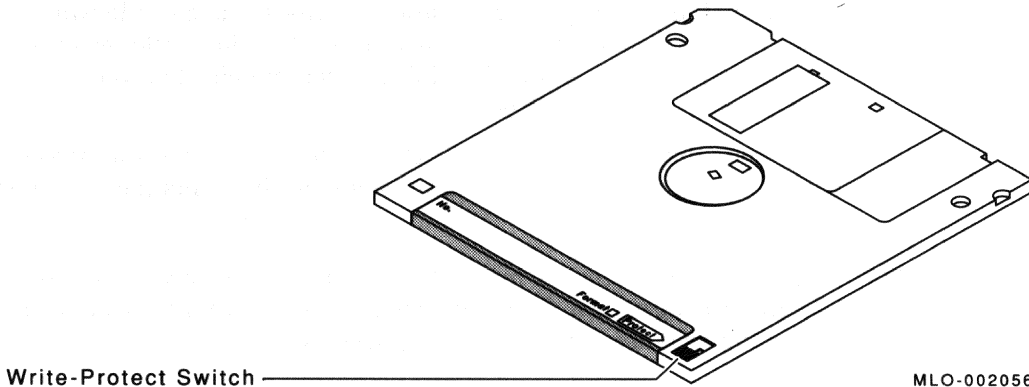
**Caution** *Do not place diskettes or magnetic media on or near your monitor. The electromagnetism from your monitor may damage diskettes by distorting or erasing the magnetic patterns.*

### Writing to and Protecting Diskettes

Write-protecting a diskette prevents accidental erasure of information. The VAXstation 3100 can read information on the diskette regardless of the position of the **write-protect switch**. However, the VAXstation 3100 cannot write data to a write-protected diskette.

**Write-Protecting a Diskette** When you use a diskette to install application software on the VAXstation 3100 or to protect information on the diskette, move the write-protect switch on the back of the diskette down until it locks in place, as shown in Figure 3-6.

**Figure 3-6 Write-Protecting a Diskette**



If you move the write-protect switch up during operation, the system software does not recognize that the diskette is no longer write-protected. You must unload and then reload the diskette before the software recognizes the diskette as write-enabled.

**Writing to a Diskette** When you use a diskette to make a backup copy of a file or to write out data, set the write-protect switch to enable writing to the tape.

To enable writing, slide the switch up until the switch locks in place.



## Inserting a Diskette

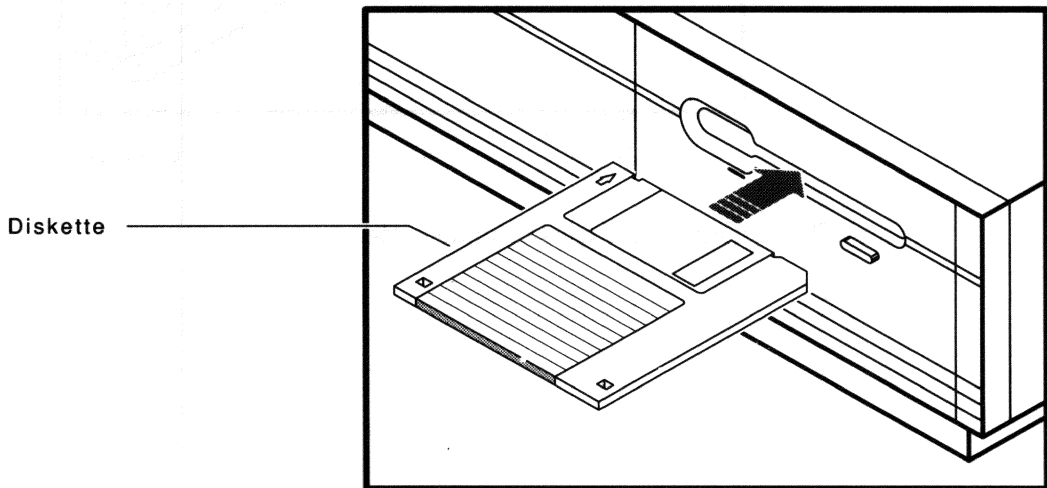
The diskette drive is on the front of your system unit. The drive can hold one diskette.

**Caution** *Never remove or insert a diskette while the VAXstation 3100 is performing a function. Inserting or removing a diskette while your system is using the diskette can cause incorrect data to be written to the diskette, and can cause damage to the diskette itself. Wait until the VAXstation 3100 finishes doing whatever you requested it to do. When the diskette drive is in use, the active light on the front of the diskette drive is on.*

To insert a diskette into the diskette drive slot, slide the diskette into the drive, as shown in Figure 3-7.

The diskette slides straight in and drops down to its load position.

**Figure 3-7** Inserting a Diskette

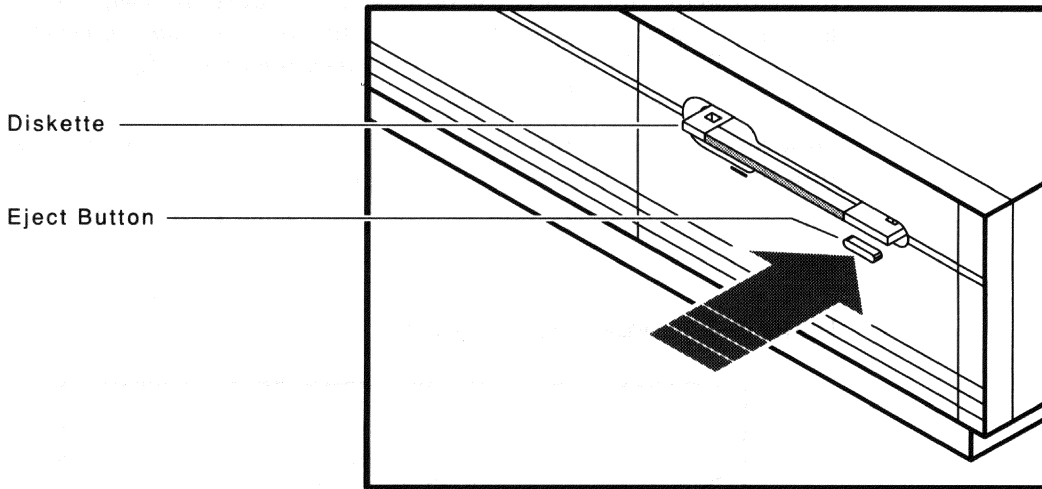


MLO-000969

## Removing a Diskette

To remove a diskette from the diskette slot, push the eject button in the lower right side of the diskette drive, as shown in Figure 3-8.

**Figure 3-8** Removing a Diskette



MLO-000970

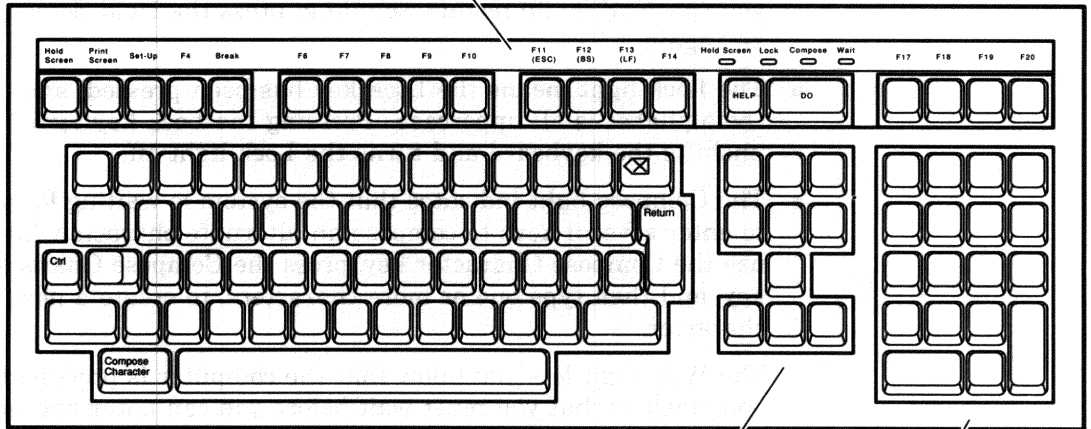
The diskette drive ejects the diskette.

# Your Keyboard

Your keyboard has some special keys that differ from the keys on a typewriter. Figure 3-9 illustrates a typical keyboard.

**Figure 3-9 Keyboard**

Keyboard Legend Strip



Special Editing Keypad

Numeric/Application Keypad

MLO-000959

## Function Keys

At the top of the keyboard is a row of function keys. These keys provide multiple functions; descriptions of some of these functions can be found on the keyboard legend strip directly above the keys.

**Note** *The specific functions of many keys on the VAXstation 3100 keyboard depend largely on the application used with the system. Always refer to the documentation that comes with your application for a complete explanation of how to use the keyboard.*

## Indicator Lights

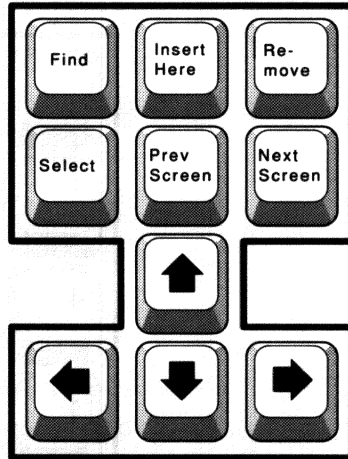
The four green indicator lights at the top of the keyboard tell you some things about the keyboard.

- The Hold Screen light means the Hold Screen key (F1, the leftmost function key) has been pressed while running applications that support the hold function, such as the DIGITAL VT200 or VT300 series terminal emulators. The Hold Screen key "freezes" information as it scrolls by so that you can read it. To resume scrolling, press the Hold Screen key again.
- The Lock light means the Lock key has been pressed, and the alphabet is all uppercase. Pressing the Lock key again unshifts the keyboard and turns the Lock light off.
- The Compose light indicates that the system is waiting for you to enter several keys to compose an alternate character. To use the Compose Character key, press the Compose Character key, and then type one or more characters, to create a new character.
- The Wait light lets you know that the computer is processing your task or that you must wait before you can enter another command.

## Special Editing Keypad

With most applications, the keys on the special editing keypad, in Figure 3-10, let you move the cursor with ease, although they do not move the mouse pointer in DECwindows. They also perform editing and screen control functions in many applications.

**Figure 3-10** Editing Keypad

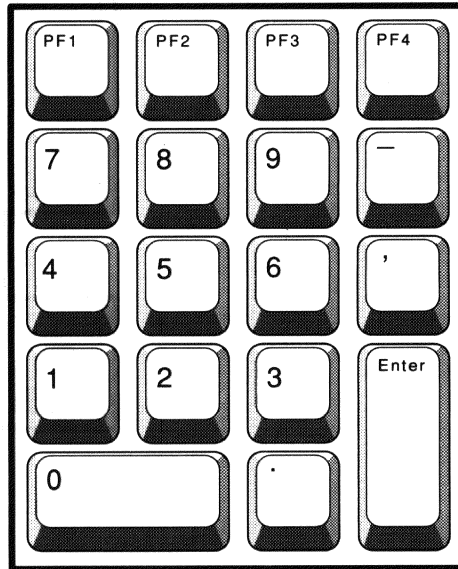


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## Numeric/Application Keypad

The keys on the numeric/application keypad, shown in Figure 3-11, can perform a variety of functions. Typical applications deal with text editing and numeric entry. The precise key functions depend on the application you are using and the keyboard you ordered.

**Figure 3-11** Numeric/Application Keypad



MLO-000958

## Mouse

You can use the mouse to point to and select objects on the screen after installing windowing software on your system. To learn how to use your mouse, see your windowing documentation.

---

## Expanding Your System

This chapter provides information about installing and using external add-on disk storage and software load devices.

The following expansion boxes can be used with a VAXstation 3100:

- 600-megabyte RRD40 compact disc expansion box  
The Model 30 can use one or more external RRD40 compact disc expansion boxes.
- 332-megabyte RZ55 hard disk expansion box
- 95-megabyte TK50Z tape expansion box

Instructions for the following are included in this chapter:

- Connecting one or two expansion boxes to your system unit
- Verifying the SCSI ID default (factory) switch setting on the first expansion box
- Resetting the SCSI switches on a second expansion box

The RZ55 and the TK50Z provide disk and tape storage for your system. Optionally, the TK50Z can be used to load software.

- The RZ55 and the TK50Z are enclosed in an expansion box.
- Each expansion box is shipped with the appropriate cables and connectors for connecting more than one box. Cable connections and installation instructions are the same for both expansion boxes.
- If you have more than one RZ55, you must reset the external SCSI ID switches on the second RZ55.

The RRD40 is a read-only storage device that reads data from removable compact discs.

The RRD40 can be used for many purposes. For example, it can be used for software installation, database storage, and online documentation.

- The RRD40 is contained in a smaller expansion box than the RZ55 and the TK50Z.
- Cable connections and installation instructions for the RRD40 are the same as those for the RZ55 and TK50Z expansion boxes.
- If you have more than one RRD40, you must reset the external SCSI ID switches on the second one.
- The voltage selector switch can be set to either 110V or 220V, depending on your power requirements.

## Guidelines for Connecting Expansion Boxes

Use the following guidelines when connecting expansion boxes.

- You can connect three RRD40s, three RZ55s, or one TK50Z to your system.
- You can connect any combination of the three expansion boxes, as long as you do not connect more than three expansion boxes or more than one TK50Z to the system.
- A system must have an integral hard disk and drive controller in order to support an expansion box. Diskless VAXstation 3100 systems do not support external expansion boxes.
- You must attach the 50-pin terminator that comes with your expansion box to an unused SCSI port on the back of an expansion box.
- All expansion boxes should be plugged into the same grounded power strip or electrical outlet.
- Be sure to always turn on all expansion boxes before you turn on the VAXstation 3100 system unit.

This procedure ensures that the device in each expansion box will be ready to be used and that the system **firmware** will include the device in its configuration.



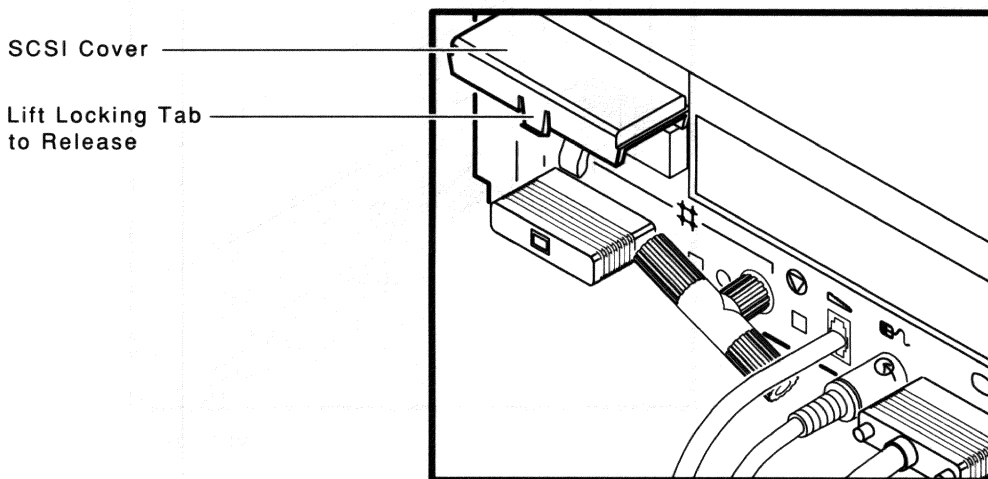
## Preparing Your System for an Expansion Box



If you plan to add an expansion box to your system, you must first remove the SCSI cover and the terminator from the SCSI port.

- 1 To remove the SCSI cover, place your fingers under the locking tab and lift the cover to release it, as shown in Figure 4-1.

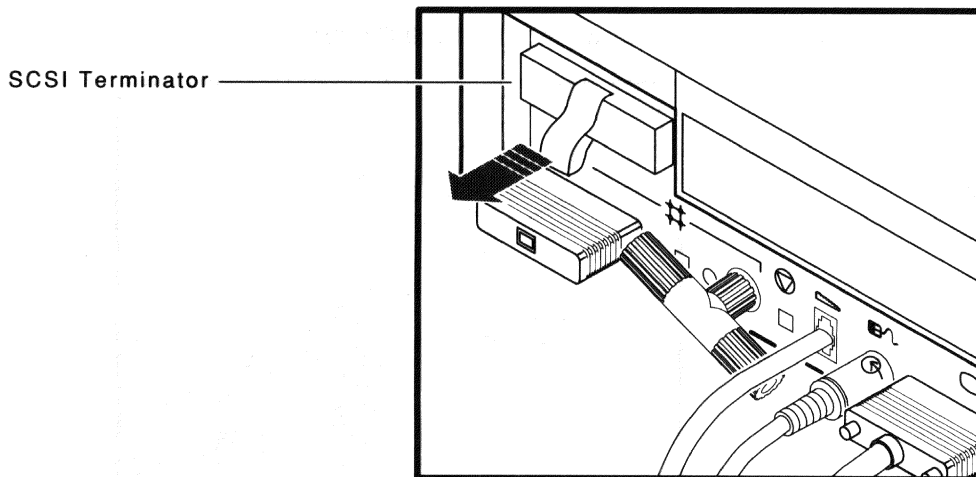
**Figure 4-1** Removing the SCSI Cover



MLO-000985

- 2 To remove the SCSI terminator, place your fingers under the loop and pull out. Figure 4-2 shows how to remove the terminator.

**Figure 4-2 Removing the SCSI Terminator**



MLO-002052

Save the terminator—you must reattach it if you disconnect the expansion box from the system unit.

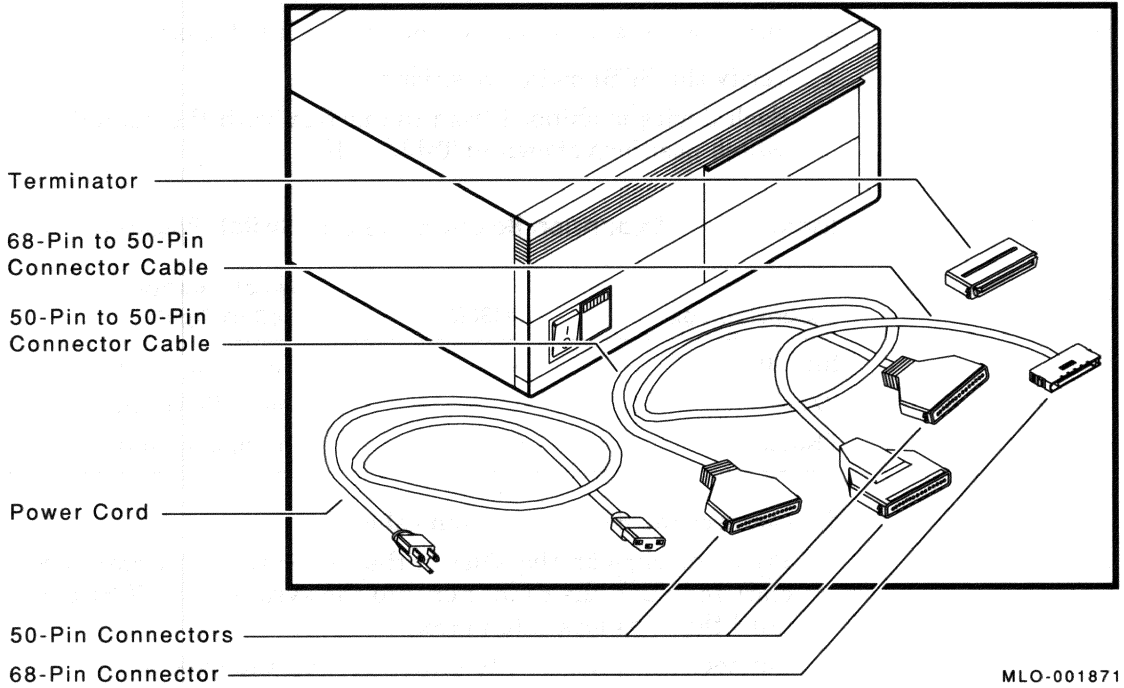
## Unpacking an Expansion Box

Each expansion box is shipped from the factory with the following accessories:

- One cable with a 50-pin connector at the large end and a 68-pin connector at the small end. Use this cable to connect the expansion box to the system unit.
- One 50-pin to 50-pin cable. Use this cable to connect two expansion boxes in a chain.
- One power cord.
- One 50-pin terminator. Use this to terminate the last expansion box.

Make sure you have all the parts shown in Figure 4-3 before you set up your expansion box.

**Figure 4-3 Expansion Box and Accessories**



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## Connecting One Expansion Box

To connect a single expansion box to your system unit, perform the following steps:

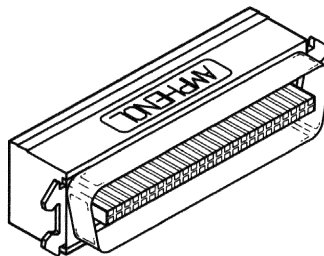
- 1 Turn the system unit and expansion box off (0).
- 2 Turn the expansion box so that the back is facing you.
- 3 Verify the SCSI switch positions.  
Each device is shipped from the factory with the default switch positions shown in Table 4-1.

**Table 4-1** Expansion Box SCSI IDs and Switch Positions

| Expansion Box | SCSI ID | Switch Positions<br>(Left to Right) |
|---------------|---------|-------------------------------------|
| RRD40         | 4       | Up, Down, Down                      |
| RZ55          | 1       | Down, Down, Up                      |
| TK50Z         | 5       | Down, Up, Down                      |

- 4 Connect the 68-pin to 50-pin cable.  
Press the clips on the sides of the the 68-pin connector (small end) and push the connector into the system unit SCSI port until the clips lock into place.  
Connect the other end to either port on the back of the expansion box and snap the bail lock in place.
- 5 Connect a 50-pin terminator to the unused port on the expansion box. Figure 4-4 shows you what the 50-pin terminator looks like.

**Figure 4-4** 50-Pin Terminator

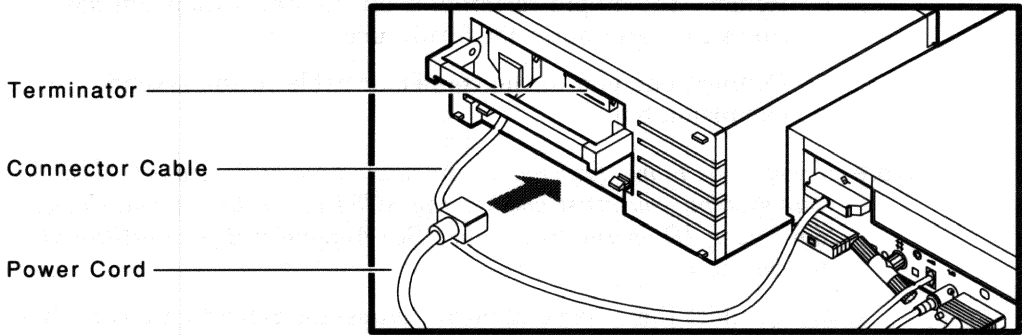


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- 6 Connect the power cord to the expansion box receptacle and plug the other end into an electrical outlet.

Figure 4-5 shows how to connect one RZ55 or one TK50Z expansion box to your system unit.

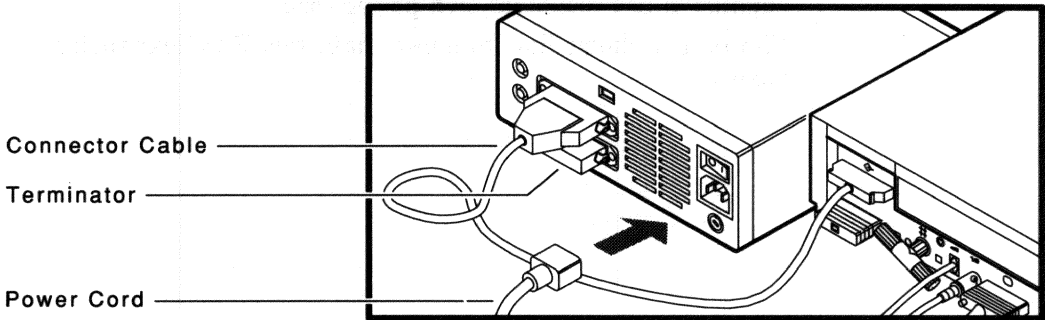
**Figure 4-5 Connecting One TK50Z or One RZ55 Expansion Box**



MLO-000986

Figure 4-6 shows how to connect one RRD40 expansion box.

**Figure 4-6 Connecting One RRD40 Expansion Box**



MLO-000988

## Connecting Two Expansion Boxes

You can add an additional expansion box at a later time and **daisy-chain** the second box to the first. To daisy-chain (link two expansion boxes together in series) one expansion box to another expansion box, perform the following steps:

- 1 Remove the 50-pin terminator on the first expansion box. Store the terminator for future use.
- 2 Connect one end of the connector cable to the second expansion box.

**Note** *If you have more than one of the same type of device attached to your system, you must change the SCSI ID on the second device to an open ID on the SCSI bus. See Appendix B for additional information.*

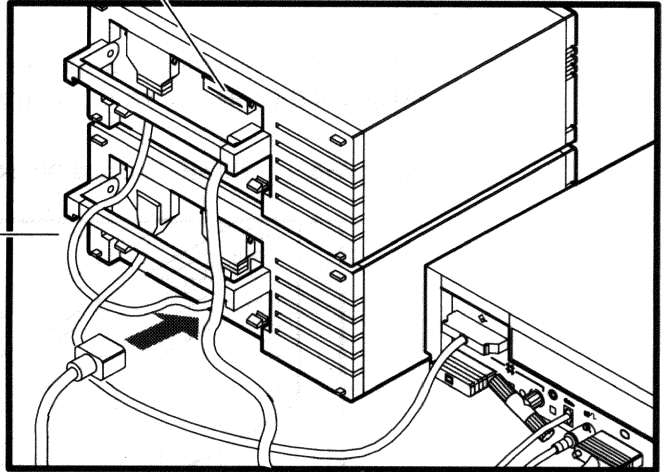
- 3 Connect the other end of the connector cable to an available port on the first expansion box.
- 4 Attach a 50-pin terminator to the unused SCSI port on the second expansion box.
- 5 Connect the power cord to the expansion box power receptacle and plug the other end into an electrical outlet. Each expansion box needs its own power cord.

Figure 4-7 shows how to daisy-chain two RZ55 expansion boxes.

**Figure 4-7 Connecting Two Expansion Boxes**

Terminator

Connector Cable



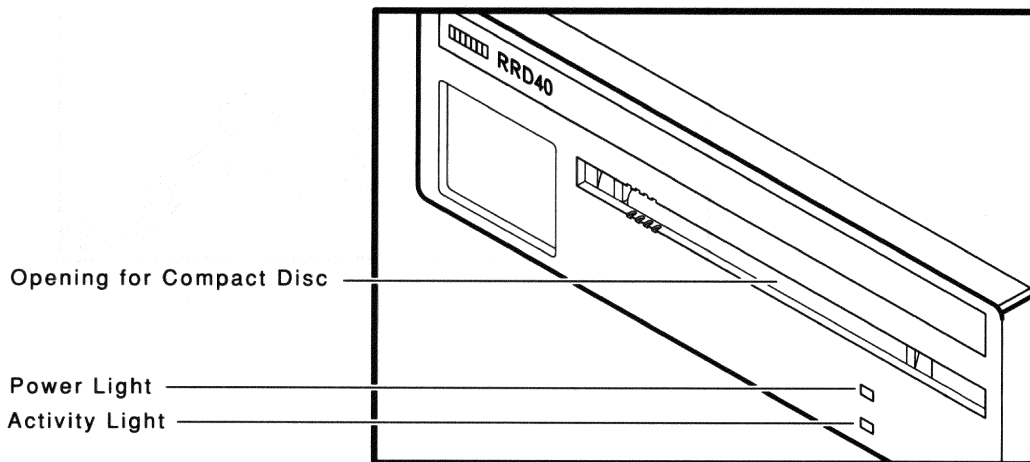
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## RRD40 Compact Disc Expansion Box

The RRD40 expansion box is available in an expansion box. For unpacking and installation instructions, see the sections earlier in this chapter.

The RRD40 expansion box has an opening for the compact disc and two lights, as shown in Figure 4-8.

**Figure 4-8 RRD40 Expansion Box**



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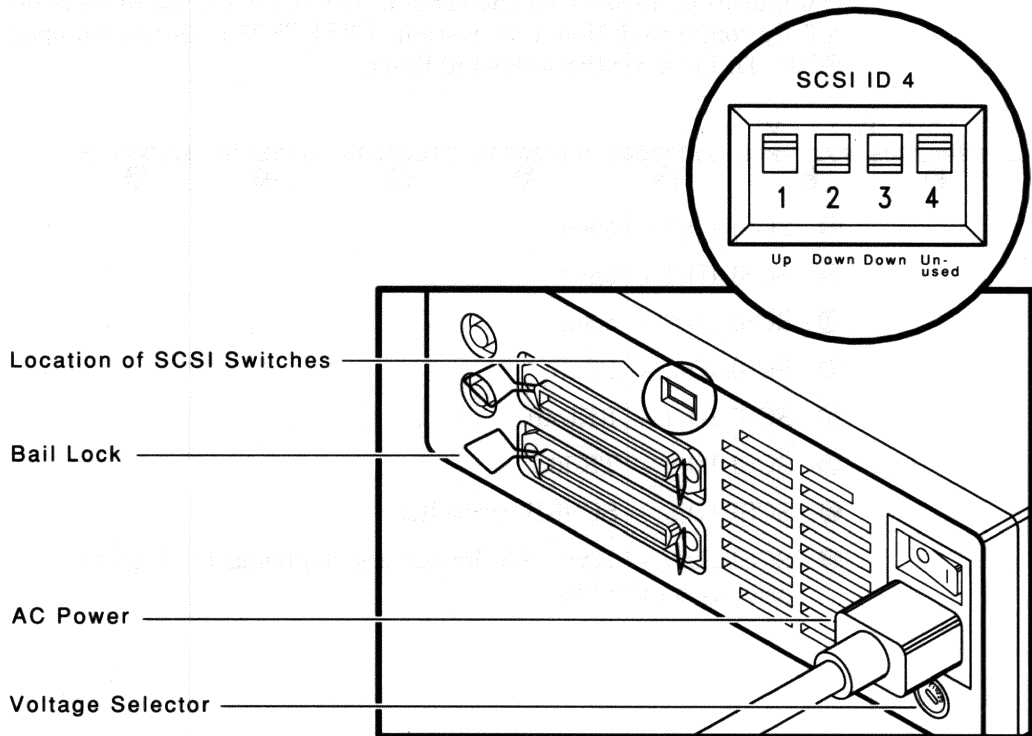
When you turn on the RRD40 expansion box, the power light goes on. The activity light goes on when you load a compact disc in the drive; it flashes when the disc is transferring information.



## Selecting the Voltage

Turn the RRD40 so that the back is facing you. Note that the RRD40 has a voltage selector switch that can be set to one of two voltages (110V or 220V). Check that the voltage selector switch on your RRD40 is set to the correct voltage for your power requirements (Figure 4-9).

**Figure 4-9** RRD40 Voltage Selector and Factory SCSI ID Switch Positions



MLO-000987

## Verifying the SCSI ID on the First RRD40

The RRD40 expansion box is shipped from the factory with the SCSI ID set to 4. Leave the SCSI ID on the first RRD40 set to 4, the factory setting, as shown in Figure 4-9.

## Resetting the SCSI ID on the Second RRD40

If you are adding a second RRD40 expansion box to your configuration, you must reset the switches. The second RRD40 expansion box should be set to an open SCSI ID (one that is not currently being used); for example, SCSI ID 1 with the switches in the following positions: down, down, up. See Table B-4 for additional information.

To determine available IDs on the SCSI-B bus, enter TEST 50 at the console prompt (>>>), then press the Return key. Your system configuration appears on the screen. The following example is for a fully configured Model 30 system. FFFFFFF05 indicates an open SCSI ID. Look for the following lines:

```
SCSI-B      1C1C.0001  V1.0
FFFFFF05  FFFFFFF05  FFFFFFF05  00000001  05020001  01000000  FFFFFFF03  FFFFFFF05
  ①          ②          ③          ④          ⑤          ⑥          ⑦          ⑧
```

- ① SCSI ID 0 — open
- ② SCSI ID 1 — open
- ③ SCSI ID 2 — open
- ④ SCSI ID 3 — RZ23
- ⑤ SCSI ID 4 — RRD40
- ⑥ SCSI ID 5 — TK50Z
- ⑦ SCSI ID 6 — SCSI-B controller
- ⑧ SCSI ID 7 — Reserved for devices requiring the highest priority on the bus

## Inserting a Compact Disc

Make sure the power light on the front of the compact disc drive is on. Insert the entire disc caddy into the disc door on the drive. Do not remove the disc from the caddy.

To insert a disc:

**1** Examine the disc caddy.

Make sure that it is not cracked or damaged in any way. Never insert a damaged caddy into a compact disc drive.

**2** Examine the disc inside the caddy.

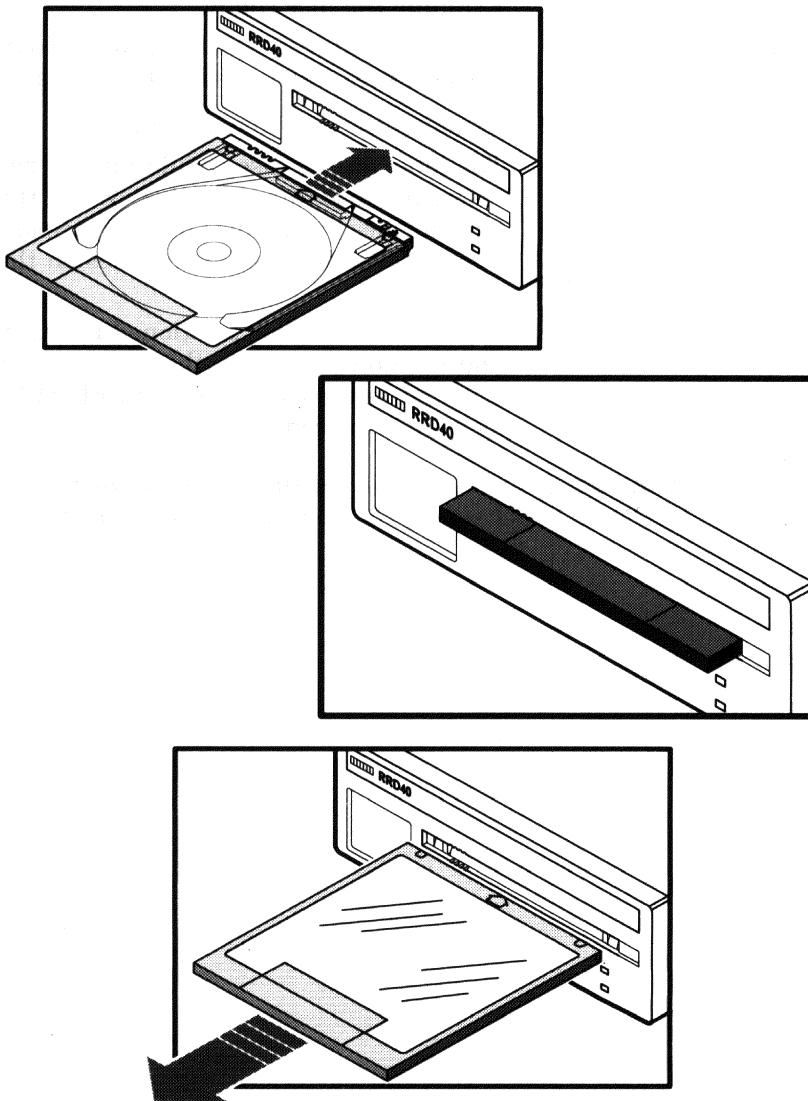
The label on the disc should always be facing up when you insert the disc into the drive. When the label is facing up, the four notches on the disc housing are on the left. These notches line up with four similar notches on the front of the compact disc drive.

If you have the disc positioned in the caddy label side up and the notches are on the right, then the disc is improperly oriented in the caddy. See the RRD40 installation guide for more information.

**Caution:** *Do not write on the disc with any implement. The silk-screened label side of the disc is easily damaged.*

- 3 Slide the caddy in as far as it will go and then remove the transparent sleeve. The disc and its housing remain in the drive. Only the transparent sleeve comes out. Figure 4-10 illustrates how to insert a compact disc.

**Figure 4-10** Inserting a Compact Disc



MLO-000972

- 4 Check that the activity light comes on within 5 seconds.

If the drive accepted the disc and the activity light does not come on, then the disc may be sitting incorrectly in the caddy. Remove the disc using instructions in the section Removing a Compact Disc.

If your software is not loading properly, use the test disc that comes with the RRD40 to determine the source of the problem. See Chapter 6 for information on using the test disc.

### **Removing a Compact Disc**

Before removing a disc, make sure that the activity light is not flashing. If it is flashing, the compact disc drive is transferring data. Wait until the activity light stops flashing.

- 1 Position the transparent sleeve so that the arrow on the sleeve is going into the drive first.
- 2 Insert the sleeve into the door as far as it will go. The activity light goes on.
- 3 Remove the caddy.

The disc and housing are back in the caddy. The activity light goes out.

## RZ55 Hard Disk Expansion Box

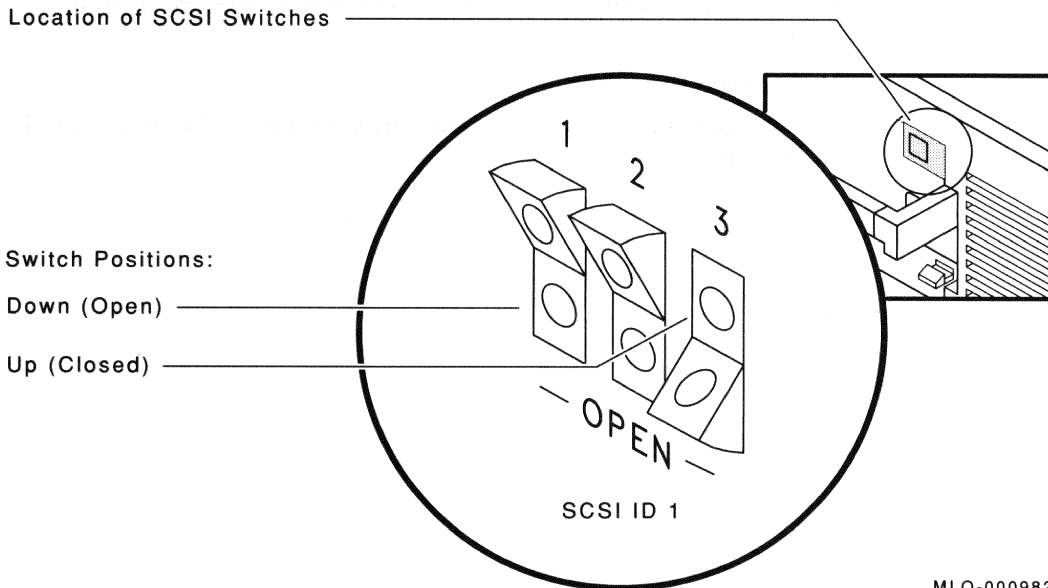
An RZ55 hard disk is available in an expansion box. If you need additional disk storage, you can add one or more RZ55 hard disks to your system. Each hard disk provides an additional 332 megabytes of disk storage.

### Verifying the SCSI ID on the First RZ55

Turn the expansion box so that the back of the unit is facing you. On the right side in a small recessed area behind the handle is a set of red and white switches surrounded by a label.

Figure 4-11 shows the back of the expansion box and the location of the switches. Do not remove the label.

**Figure 4-11** Verifying the SCSI ID on the First RZ55



Verify that the switches are in the following positions (left to right) down, down, up. The RZ55 hard disk expansion box is shipped from the factory with the switches set to SCSI ID 1. You do not need to change the SCSI ID on the first RZ55 expansion box.

## Resetting the SCSI ID on the Second RZ55

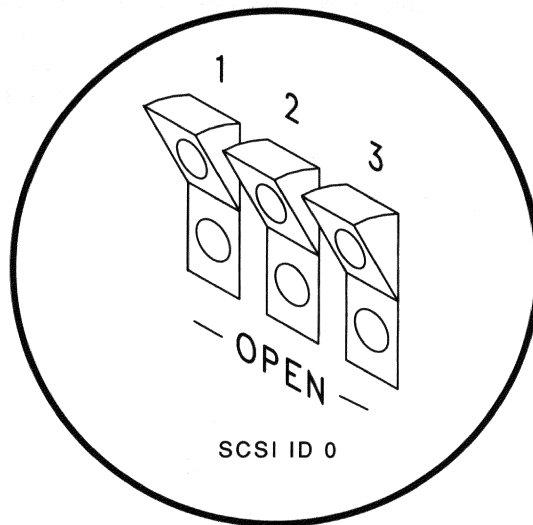
To determine available IDs on the SCSI-B bus for a fully configured system, enter TEST 50 at the console prompt (>>>), then press the Return key. Your system configuration is displayed on the screen. The following example is for a fully configured Model 30 system. FFFFFFF05 indicates an open ID.

```
SCSI-B      1C1C.0001  V1.0
FFFFFFFF05  FFFFFFF05  FFFFFFF05  00000001  05020001  01000000  FFFFFFF03  FFFFFFF05
  ①          ②          ③          ④          ⑤          ⑥          ⑦          ⑧
```

- ① SCSI ID 0 — open
- ② SCSI ID 1 — open
- ③ SCSI ID 2 — open
- ④ SCSI ID 3 — RZ23
- ⑤ SCSI ID 4 — RRD40
- ⑥ SCSI ID 5 — TK50
- ⑦ SCSI ID 6 — SCSI-B controller
- ⑧ SCSI ID 7 — Reserved for DIGITAL use

If you are adding a second RZ55, you must change the SCSI ID to 0 or any other open ID on the SCSI-B bus. Each device on the bus must have a unique SCSI ID. For SCSI ID 0, set the switches to the following positions: down, down, down. Figure 4-12 shows the proper switch setting.

**Figure 4-12** Resetting the SCSI ID on the Second RZ55



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## **TK50Z Tape Expansion Box**

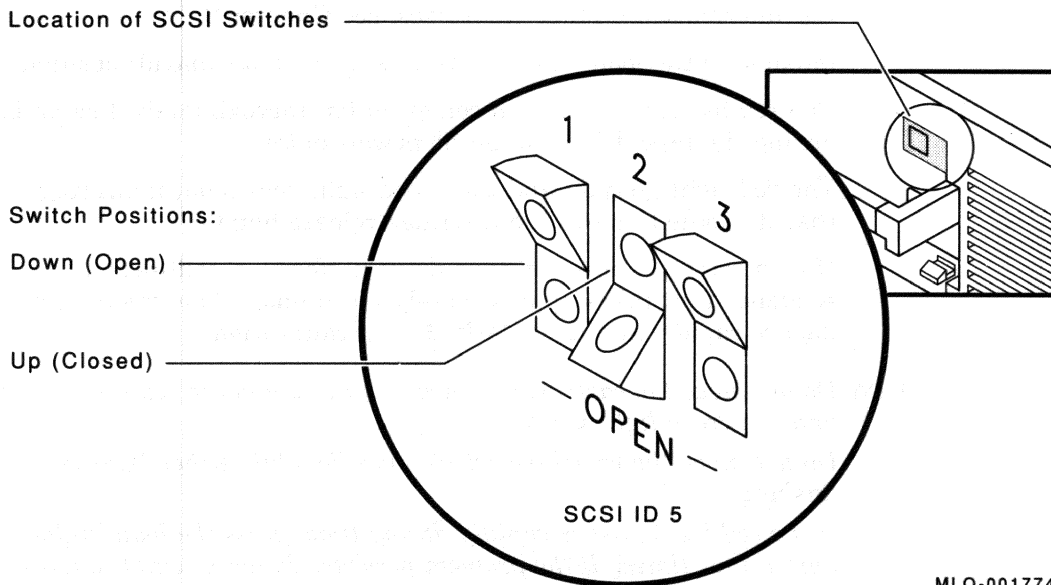
The TK50Z tape drive is available in an expansion box. The drive holds one removable TK50K or TK52K magnetic tape cartridge. The tape cartridge stores up to 95 megabytes of data. Use the tape cartridge to load software, databases, or to make copies (or backups) of your files.

### **Verifying the SCSI ID on the TK50Z**

Turn the expansion box so that the back is facing you. On the right side in a small recessed area is a set of red and white switches surrounded by a label. Do not remove the label. Figure 4-13 shows the back of the expansion box and the location of the switches.



**Figure 4-13 Verifying the SCSI ID on the TK50Z**



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The TK50Z expansion box is shipped from the factory with the SCSI ID set to 5. The switches should be in the following positions: down, up, down. Leave the switches in the default (factory) position.

The TK50Z expansion box has two primary controls: the cartridge release handle and the load/unload button. The cartridge release handle allows cartridges to be inserted, locked into position, and removed. The load/unload button controls winding and rewinding of the tape. The in (on) position of the load/unload button is for loading, or winding, tape cartridges. The out (off) position is for unloading, or rewinding, tape cartridges.

## Inserting a Tape Cartridge

The TK50Z uses TK50K or TK52K (CompactTape) tape cartridges. For information on tape cartridges, see Chapter 3.

Make sure the load/unload button is in the out (unload) position.

The red load/unload button comes on for approximately 4 seconds during the tape drive automatic power-up test.

The red light goes off and the green light comes on, indicating that it is safe to move the cartridge release handle.

If a cartridge is new, the tape drive performs a calibration sequence that takes approximately 40 seconds. The green light flashes rapidly and irregularly during calibration.

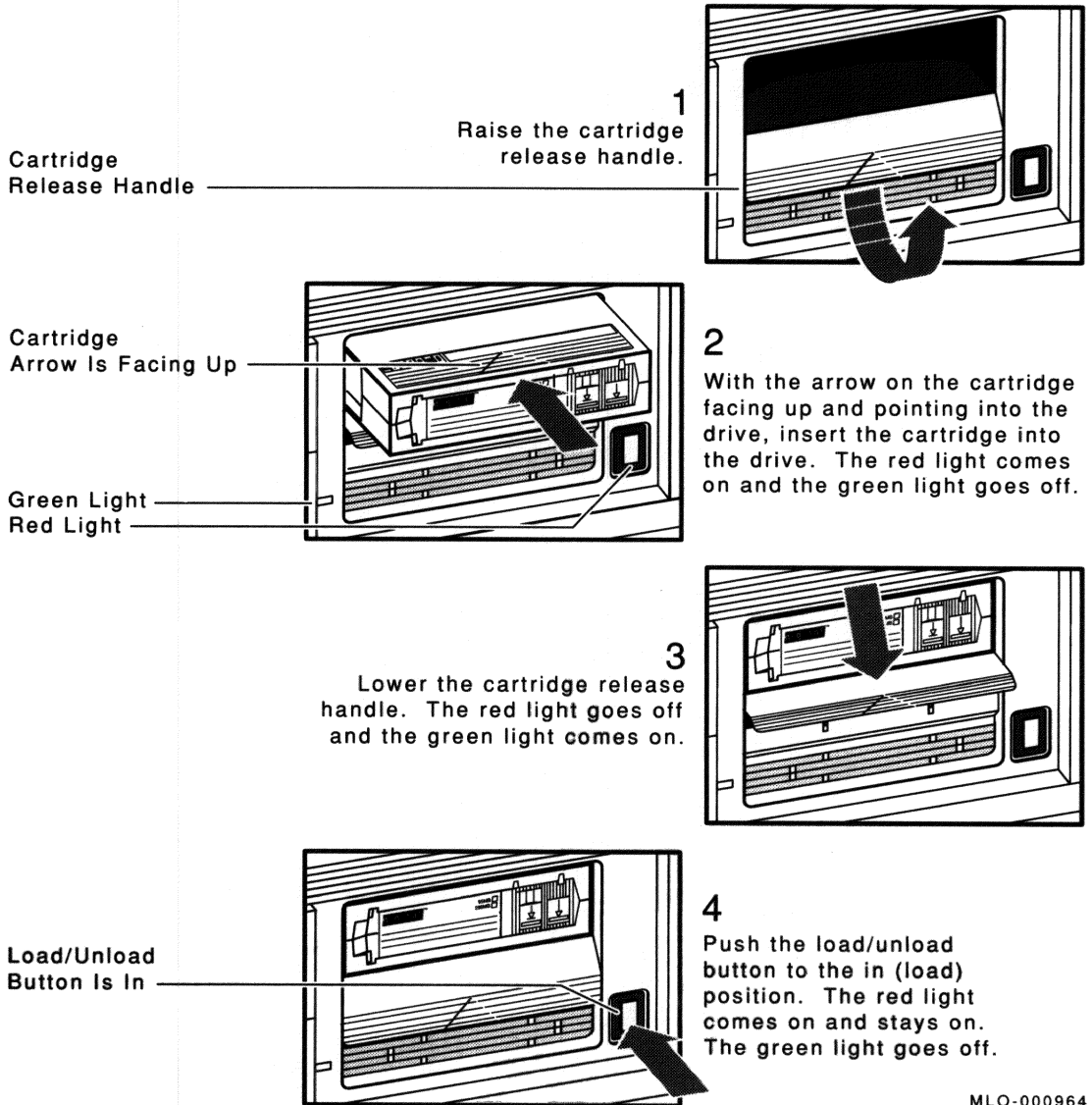
**Caution** *Do not move the cartridge release handle unless the red light is off and the green light is on.*

*Do not move the cartridge release handle while either light is flashing.*

*If the red light flashes rapidly at any time, press the load/unload button four times. If the problem persists, do not attempt to use the tape drive or remove the cartridge.*

Figure 4-14 shows how to insert a tape cartridge.

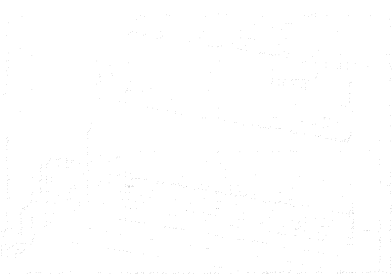
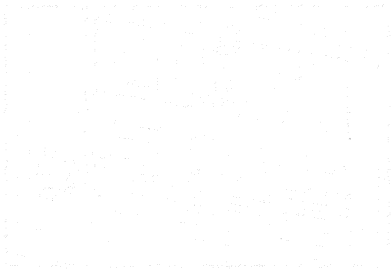
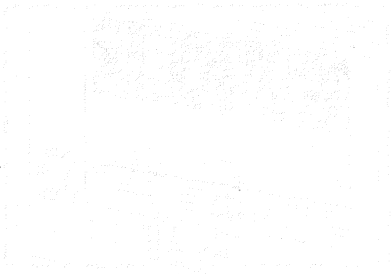
**Figure 4-14** Inserting a Tape Cartridge into the TK50Z



MLO-000964

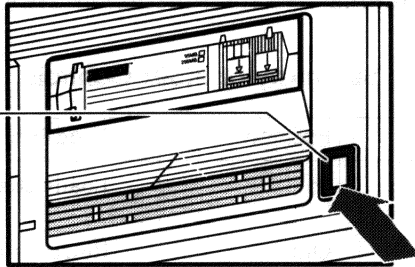
## Removing a Tape Cartridge

Tape cartridges must be unloaded (rewound) before being removed from the drive (Figure 4-15). See your software documentation for information on rewinding a tape.



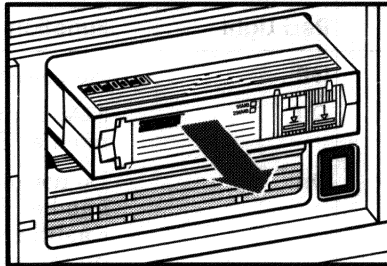
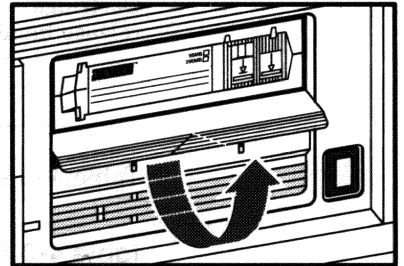
**Figure 4-15 Removing a Tape Cartridge from the TK50Z**

Load/Unload  
Button Is Out



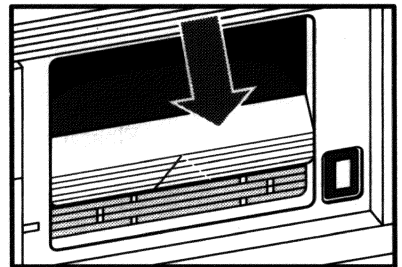
**1**  
Release the load/unload button to the out (unload) position. The red and green lights flash slowly as the tape rewinds. When the tape is completely unloaded, the red light goes off and the green light comes on.

**2**  
Raise the cartridge  
release handle.



**3**  
Remove the tape cartridge  
and store it in its plastic  
container.

**4**  
Lower the cartridge  
release handle.



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## Summary of TK50Z Controls and Lights

Table 4-2 summarizes the function of TK50Z controls.

**Table 4-2 Summary of TK50Z Controls**

| Control                  | Position | Function  |
|--------------------------|----------|---|
| Load/unload button       | In       | Loads the tape (10 to 15 seconds).  |
|                          | Out      | Rewinds and unloads the tape.   |
| Cartridge release handle | Up       | Lets you insert a tape or remove a tape after rewind and unload operations are completed. |
|                          | Down     | Locks tape in operating position.   |

Table 4-3 summarizes the function of TK50Z indicator lights.

**Table 4-3 Summary of TK50Z Lights**

| Green Light     | Red Light        | Function   |
|-----------------|------------------|--|
| Off             | Off              | No power to the tape drive.  |
| On              | Off              | Safe to move cartridge release handle. Power is present.   |
| Off             | On               | Do not move the cartridge release handle. One of the following conditions is in effect: power-up test is occurring; cartridge is inserted but handle is still up; tape is loading or unloading; tape is stopped. |
| On              | On               | Tape loaded successfully.  |
| Flashing        | On               | Tape is in motion (except rewind). Read/write commands are being processed. Irregular fast flashing of green light means tape calibration is occurring. (First use of tape.)                                     |
| Flashing slowly | Flashing slowly  | Tape is rewinding.   |
| Off             | Flashing rapidly | Tape or drive fault exists.  |

---

## Connecting to a Network

This chapter contains information on how to

- Prepare for connecting to a network
- Create a simple daisy-chain network

When you daisy-chain systems together to form a work group, you connect systems together sequentially with cables and connectors.

Connecting a system to a ThinWire Ethernet network or a Standard Ethernet network takes only a few minutes for an experienced user, a bit longer for a new user.

## A Brief Introduction to Networks

Networks are useful to people who need to work together and share information. When you work cooperatively on projects, you need to communicate and exchange information, share common databases, share files and disk storage, share printers, or use an electronic mail system. DIGITAL networking lets you do all these tasks.

Here are a few networking definitions to help you get started:

- **Network**—A network is a group of computers, connected by communications lines, that share information and resources. A network can span a small office, a department, a building, a country, or it can be worldwide. DIGITAL hardware and DECnet software enable computers to form a network.
- **Local Area Network (LAN)**—A local area network is a high-speed communications network that covers a limited geographical area, such as an office area, a department, a building, or a campus (group of buildings).
- **Ethernet**—Ethernet is the DIGITAL local area network. In 1980, Digital Equipment Corporation, Xerox Corporation, and Intel Corporation developed a specification for the Ethernet local area network. The specification includes information on how to connect devices to a coaxial cable, how to configure nodes, the maximum number of nodes, and the distance between nodes.
- **ThinWire Ethernet**—All DIGITAL Ethernet products can connect to ThinWire cable. ThinWire cable can be used in any environment; it is flexible, fully compatible with standard Ethernet, inexpensive, and offers 10 megabit per second communication. ThinWire is ideal for small daisy-chain standalone networks in which VAXstation 3100 Model 40 and Model 30 users share resources, such as printers and storage devices.
- **Standard Ethernet**—Standard Ethernet coaxial cable is used to connect wiring centers and computer facilities, floors of buildings, and standalone ThinWire segments. It is rugged, reliable, and immune to external factors that might otherwise limit high-speed 10 megabit per second data communication.
- **DECnet**—DECnet networking software enables many DIGITAL computer systems to form a network. It runs on systems in both local area networks and wide area networks.



- **DECnet-ULTRIX**—ULTRIX-32 software is DIGITAL's version of the UNIX operating system. DECnet-ULTRIX provides an Ethernet-based communication link between the VMS and ULTRIX operating systems.  
ULTRIX-32 also uses Transmission Control Protocol/Internet Protocols (TCP/IP) to facilitate interaction with internet networks.
- **Work group**—A work group consists of cooperating VAXstation 3100 systems; Ethernet cable connects each of the computers together. Work groups are formed using ULTRIX-32 software or VMS and DECnet software.
- **Local area VAXcluster (LAVc)**—A local area VAXcluster is a group of VAX systems that connect by means of Ethernet cable to form a cluster (a type of work group) in order to share resources, printers, and disk storage. A LAVc consists of up to 42 nodes, any member of which can be the server node. A VAXstation 3100 Model 40 is the server node and a Model 30 is the satellite node in a LAVc.
- **DECconnect**—DECconnect is a family of networking products that includes network electronics, cabling, and connections.

## Connecting to a ThinWire Ethernet Network

If your system will be a networked standalone system, that is, a workstation that starts and operates independent of all other computers, you need only make one network connection for your system.

If you are setting up a local area VAXcluster or work group, you may need to designate someone as the network coordinator to help create and manage the work group, assign unique node names and addresses for each system, and provide administrative assistance to users.

If you are connecting a work group to an existing network, ask the network coordinator for the best way to connect to the larger network. Check that all node names and node addresses in your work group are unique and do not already exist in the larger network. Call your service representative for more network-specific information.

### Verifying the Network Select Button Position

The ThinWire/Standard Ethernet network select button is normally set in the out (flush) position when you receive your VAXstation 3100. The two positions are:

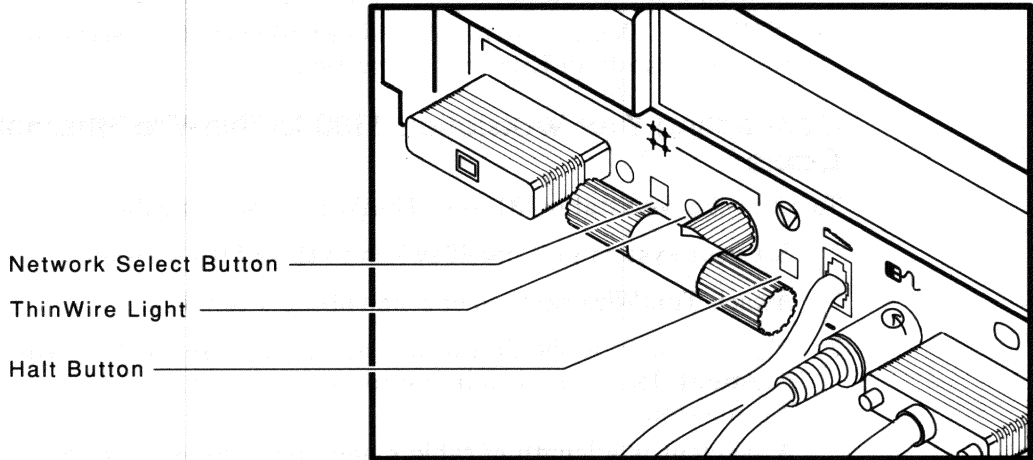
- Out—ThinWire Ethernet
- In—standard Ethernet

When you turn on your system, the light to the right of the network select button is green, indicating that you are ready to connect to ThinWire Ethernet.

Figure 5-1 shows the network select button in the out (or flush) position, that is, set for ThinWire Ethernet.



**Figure 5-1 Network Select Button Set for ThinWire Ethernet**



MLO-000950

### Verifying ThinWire Ethernet Network Installation

Turn on your VAXstation 3100.

- The following line appears:

```
F...E...D...C...B...A...9...8...7...6...5...4...3...2...1
```

- The console prompt (>>>) appears. If the console prompt does not appear, press the halt button on the back of the system unit. Use a pen or small, pointed object to push the halt button.
- Enter **SHOW ETHERNET** at the console prompt. The Ethernet hardware address appears in the following format:

```
ID XX-XX-XX-XX-XX-XX
```

and it could look like this example:

```
ID 08-00-2B-07-A7-80
```

- Write your Ethernet hardware address here:

**Ethernet hardware address** \_\_\_\_\_

You will need that Ethernet hardware address for each system when you are configuring the software for your VAXstation 3100 in a local area VAXcluster (LAVc).

- Enter **TEST 50** at the console prompt. If the last line of information in the display is NI 0000.0001, then the Ethernet subsystem is working.



If a number between 0000.0002 and 0000.7000 appears on that line, there is a failure in the Ethernet subsystem.

If NI 0000.7000 or any number above 0000.7000 appears on this line, check all Ethernet connections.

## Connecting Your VAXstation 3100 to ThinWire Ethernet Cable

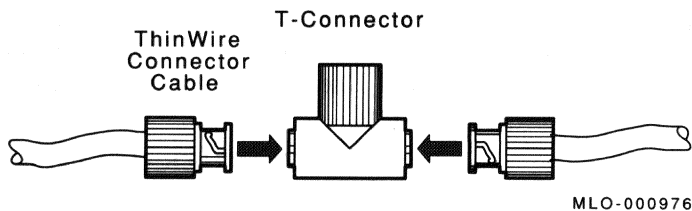
To connect a VAXstation 3100 to ThinWire Ethernet cable:

- 1 Set your system unit on/off switch to the off (0) position.
- 2 Attach ThinWire cable to one side of the T-connector.
- 3 If your system is the first or last system in a single ThinWire **segment**, leave the terminator attached to one side of the T-connector.

A segment is a length of cable made up of one or more cable sections connected with barrel connectors or T-connectors.

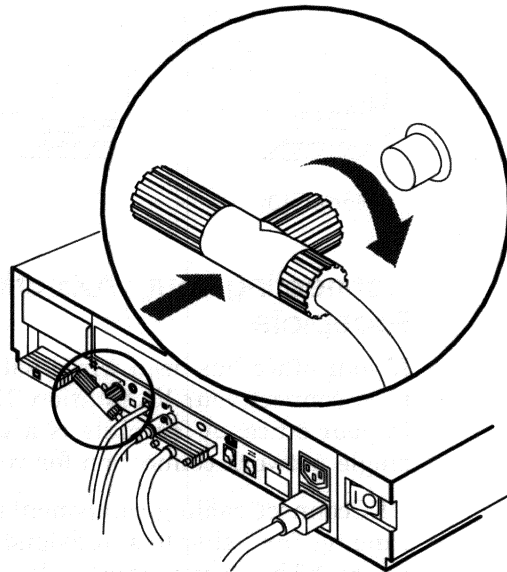
- 4 If your system is not the first or last system and you want to connect another system to the ThinWire cable, add another section of cable to the T-connector, as shown in Figure 5-2.

Figure 5-2 Adding ThinWire Cable



- 5 Make sure that a T-connector is attached to the back of your system. Push the T-connector onto the system unit BNC connector and then turn it to the right until it locks in place. See Figure 5-3.

**Figure 5-3** Connecting the T-Connector to the Back of the System Unit



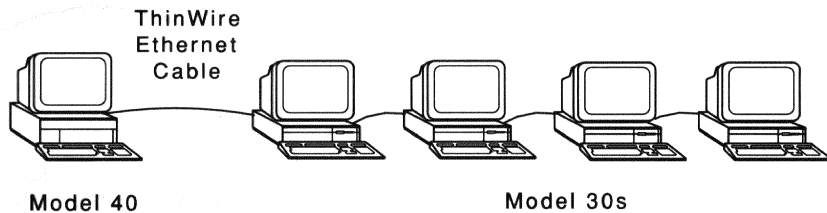
MLO-000977

## Creating a Daisy-Chain Work Group

A daisy-chain work group is created by serially connecting several workstations on the same ThinWire segment. This segment can function as a standalone network or it can be connected to a larger network.

The daisy-chain configuration lowers the cost of wiring, but there is a risk that someone might improperly unplug a system and make the network connections inoperative between systems on the same ThinWire segment. Figure 5-4 shows a VAXstation 3100 Model 40 connected to several VAXstation 3100 Model 30s forming a work group.

**Figure 5-4 VAXstation 3100 Systems in a Daisy-Chain Work Group**



MLO-000996

## Connecting Your VAXstation 3100 to a DECconnect Faceplate

If your office has been wired with DIGITAL DECconnect products, then connect your VAXstation 3100 to the DECconnect faceplate in your office. A faceplate is a wall receptacle that provides a single network connection for your VAXstation 3100 system.

DECconnect cabling components support network configurations ranging from simple standalone ThinWire networks to multi-media LANs that connect PCs, workstations, and VAXstation 3100 systems. No matter how large or small your network, the most visible DECconnect component in your office is the faceplate.

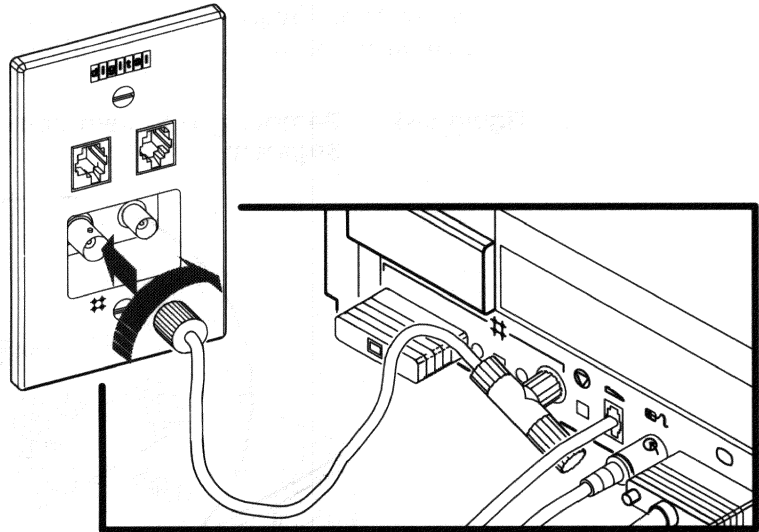
- A faceplate may contain a single ThinWire BNC connector which permits one VAXstation 3100 Model 40 and multiple VAXstation 3100 Model 30 satellite systems to be daisy-chained one to the other on the office side of the faceplate.
- A faceplate may contain a ThinWire Ethernet daisy-chain connector which permits behind-the-wall daisy-chaining of multiple faceplates to a single segment of ThinWire cable. One VAXstation 3100 system can be attached to each faceplate.

Your network coordinator will know which type of DECconnect faceplate you have in your office.

To connect your VAXstation 3100 system, attach one end of the ThinWire cable to the office side of the DECconnect faceplate. Attach the other end of the ThinWire cable to the ThinWire port on the back of your system unit.

Figure 5-5 shows a VAXstation 3100 plugged into a DECconnect office faceplate.

**Figure 5-5 Connecting to a DECconnect Faceplate**



MLO-001867

### **Troubleshooting the ThinWire Segment**

If you have verified your ThinWire Ethernet installation and have found problems, use the following checklist to make sure all connections are correct:

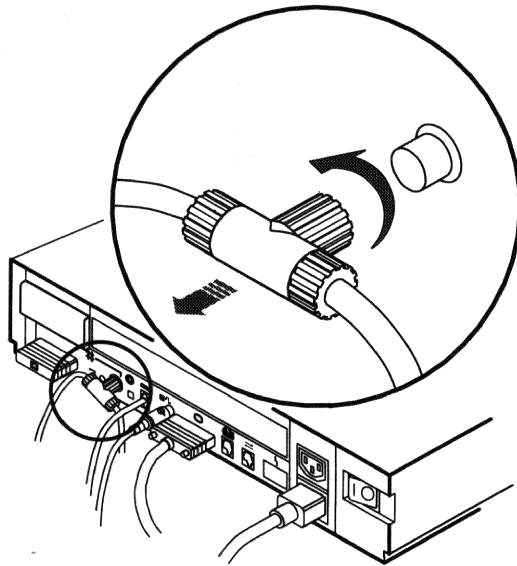
- 1 Check that all connections are secure on the ThinWire Ethernet segment.
- 2 Check that there is a T-connector between the connector on the ThinWire cable and the system unit.
- 3 Check that there is no ThinWire segment between the system and the T-connector. (The T-connector must attach directly to the system.)
- 4 Check that there are no branches off a ThinWire segment except through a DEMPR (Digital Ethernet Multiport Repeater).

A DEMPR provides eight ThinWire Ethernet drops from a single standard Ethernet connection.

- 5 Check that a ThinWire segment is not looped from one port on the DEMPR to another port on the DEMPR.
- 6 Check that the T-connector has not been disconnected from an operating ThinWire Ethernet segment.

If you need to remove a system from an active ThinWire segment, simply disconnect the center of the T-connector from the system. Figure 5-6 shows the correct way to remove a T-connector from an active ThinWire segment.

**Figure 5-6 Removing a System from an Active ThinWire Segment**



MLO-001772

- 7 Check that you have not disconnected a terminator from an active ThinWire segment.

After you have checked all ThinWire Ethernet connections, retest the Ethernet. Enter the following command at the console prompt:

```
>>> TEST 1 
```

The resulting display tells you if your connection is established. A (1...) and then the console prompt (>>>) appears. If a connection is not established, the following message appears:

```
? 84 FAIL  
>>>
```



## Connecting to a Standard Ethernet Network

If you are setting up a local area VAXcluster (LAVc), you will need to designate someone as the network coordinator to manage the network, assign unique node names and addresses for each system, and provide administrative assistance to users.

If you are connecting a work group to an existing network, ask the network coordinator for the best way to connect your work group to the larger network. Have the network coordinator check that all node names and node addresses are unique and do not already exist in the larger network.

### Setting the Network Select Button for Standard Ethernet

To use standard Ethernet on your VAXstation 3100 Model 30, press the network select button on the back of the system unit in. When you turn on your system, the light near the standard Ethernet connector is green and the ThinWire Ethernet light is out. You are ready to connect to standard Ethernet.

### Verifying Standard Ethernet Network Installation

To verify standard Ethernet installation, you need the 15-pin standard Ethernet loopback connector attached to your system unit.

1 Turn on your system. You will see the following:

F...E...D...C...B...A...9...8...7...6...5...4...3...2...1

2 The light on the end of the loopback connector should be on.

3 The console prompt (>>>) appears. Enter the SHOW ETHERNET command.

```
>>> SHOW ETHERNET 
```

The Ethernet hardware address is displayed in the following format:

```
ID XX-XX-XX-XX-XX-XX
```

For example:

```
ID 08-00-2B-02-CC-71
```

4 Write down your Ethernet hardware address and save it. Each Ethernet hardware address is unique.

Ethernet hardware address \_\_\_\_\_

You will need the hardware address for each system when you configure the VAXstation 3100 in a LAVc.

- 5 Enter TEST 50 at the console prompt. If the last line of the display is NI 0100.0001, then the Ethernet subsystem is installed and working.

If a number between 0000.0002 and 0000.7000 appears on this line, there is a failure in the Ethernet subsystem.

If NI 0000.7000 or any number above 0000.7000 appears on that line, check all Ethernet connections.

- 6 After successfully completing the power-up self-test and verifying the network, remove the loopback connector and store it for future diagnostic testing. Go to the section Connecting a Transceiver Cable.

## Troubleshooting Standard Ethernet

If data appears on the last line of information above the console prompt:

- 1 Make sure the loopback connector is securely connected to the system.

However, if you are connected to an active Ethernet segment, your system can be tested without a loopback connector.

- 2 Turn off your system and turn it on again. Ethernet connection is verified during the power-up sequence.
- 3 After you have checked all Ethernet connections, retest the Ethernet subsystem. Enter the following command at the console prompt:

```
>>> TEST 1 
```

- 4 If a connection has been established, the console prompt (>>>) appears.
- 5 If a connection is not established, the following appears:

```
? 84 FAIL  
>>>
```

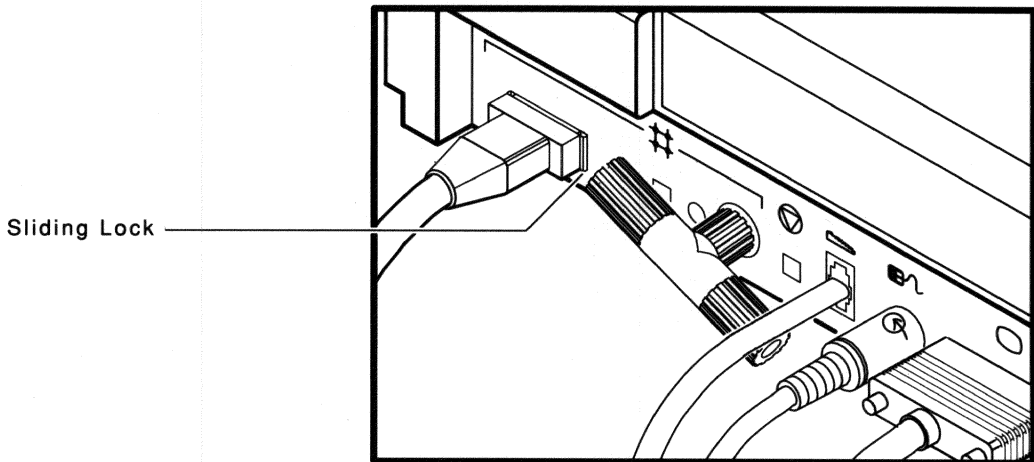
## Connecting a Transceiver Cable

A transceiver cable is the physical connection between a standard Ethernet network interface and a VAXstation 3100. You use a transceiver cable when you want to connect your system to an H4000 transceiver or a DELNI that is attached to the standard Ethernet cable.

To connect a transceiver cable to your system:

- 1 Set the system unit on/off switch to off (0).
- 2 Attach the 15-pin connector on the standard Ethernet transceiver cable to the back of the system unit.
- 3 Use the screwdriver that is included in your shipment to move the sliding lock (part of the standard Ethernet connector) and make the standard Ethernet connection secure. Figure 5-7 shows the correct connection.

**Figure 5-7** Connecting a Transceiver Cable



MLO-001873

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## Handling Problems

To determine the point at which your problem occurs, follow these steps:

- 1 Turn your equipment off (0) in the following order:
  - The monitor and all peripheral devices such as printers and modems
  - Any expansion boxes
  - The system unit
- 2 Check that the following cables are correctly connected:
  - Monitor cable from monitor to system unit
  - Monitor power cord
  - System power cord
  - Expansion box connector cable to system unit
  - Expansion box power cord
- 3 Turn your equipment back on (1) in the following order:
  - Expansion boxes (in the following order):
    - RZ55
    - TK50Z
    - RRD40
  - The monitor
  - The system unit
- 4 Adjust the contrast and brightness on your monitor.

After you determine the source of the problem, see Table 6–1 to learn how to correct it.

## How to Use the Troubleshooting Table

When you have a problem, follow these steps:

- 1** Note the symptoms of the problem.
- 2** Check the Symptom column in Table 6–1 for a match.
- 3** Check the conditions for that symptom in the Possible Cause column. If more than one possible cause is given, check the possible causes and their suggested solutions in the order listed.
- 4** Follow the advice in the Suggested Solution column.
- 5** If a problem persists, call your service representative.

**Table 6-1 Troubleshooting**

| Symptom  | Possible Cause   | Suggested Solution   |
|--|--|--|
| <b>System Unit Problems</b>                              |  |  |
| System unit fan is off.                                  | Power cord is not plugged in.  | Check connections and power source.  |
| Power-up display does not appear after 20 seconds.       | Monitor cord or video cable is not plugged in.                               | Check monitor cord and video cable connections.  |
|  | Monitor brightness and contrast controls are too dark to see screen display. | Adjust the monitor brightness and contrast controls.   |
|  | Keyboard cable is not connected.   | Check the keyboard cable connection.   |
| Power-up display contains question marks.                | Monitor fuse is blown.   | Refer to your monitor guide to replace the monitor fuse.   |
|  | Possible hard error.   | See sections Power-Up Error Messages, Self-Tests, and System Exerciser for further test instructions.                  |
| Operating system software does not appear on the screen. | Operating system software is not installed.                                  | See operating system software documentation for installation instructions.   |
|  | A problem exists with the hard disk.   | See sections Self-Tests, Configuration Display, and System Exerciser for further test instructions.                    |
|  | Expansion box cable and power cord are not connected.                        | Check the power cord and expansion box connector cable.  |
|  | Default recovery action is set to halt.                                      | Change the default recovery action to boot system from the location of your operating system software. See Appendix A. |
|  | Incorrect boot device specified.   | See Appendix A to specify the correct boot device.   |
| <b>Monitor Problems</b>                                  |  |  |

Refer to the installation/owner's guide that comes with your monitor.

(continued on next page)

**Table 6-1 (Cont.) Troubleshooting**

| Symptom  | Possible Cause   | Suggested Solution   |
|--|--|--|
| <b>Mouse Problems</b>  |  |  |
| Pointing device (mouse or optional tablet) pointer does not appear on the monitor screen, or the monitor does not respond to the pointing device commands. | Pointing device cable is installed incorrectly or is loose.          | Turn off the system and then unplug and replug the cable to reset the device.  |
|  | The system is in console mode, and no pointer appears on the screen. | Install windowing software.  |
| <b>Keyboard Problems</b>   |  |  |
| Keys do not work.  | The Hold Screen key is active.                                       | Press the Hold Screen key to release the hold on the screen.   |
| <b>Disk and Diskette Problems</b>  |  |  |
| Software does not boot from hard disk drive.   | A problem exists with the hard disk.                                 | Check to see if the operating system software is installed.<br>See the sections Self-Tests, Configuration Display, and System Exerciser. |
|  | Default boot device is set incorrectly.                              | See Appendix A to set or change the default boot device.   |
|  | Recovery action is set to halt.                                      | See Appendix A to change the default recovery action.  |
| Software is not installed or is corrupted on the hard disk.  | Software is not installed or is corrupted on the hard disk.          | Refer to your software documentation for help.   |
|  | No diskette is in the diskette drive.                                | Insert a diskette with software. Use the software documentation instructions.  |
|  | Diskette was inserted incorrectly.                                   | Check that the write-protect notch on the diskette is to your left when you insert the diskette and that the label is up.                |
| Software cannot be read from diskette drive or diskette read or write error message is displayed.  | Diskette is damaged or does not contain software.                    | Try another diskette.  |

(continued on next page)



**Table 6-1 (Cont.) Troubleshooting**

| Symptom  | Possible Cause  | Suggested Solution  |
|--|---|---|
| <b>TZ30 Tape Drive Problems</b>  |   |   |
| TZ30 tape drive green light flashes rapidly and tape does not move.  | The drive mechanism is faulty or the tape cartridge is damaged. | Press and release the unload button to clear the fault. If the condition persists, do not attempt to remove the tape cartridge or use the tape drive.                 |
| TZ30 passes power-up test but does not operate.  | No cartridge in drive or the cartridge is not loaded.           | Insert the cartridge and press and release the unload button.   |
| Cartridge release lever does not slide.  | Cartridge is in use.  | Wait for green light to come on and try again. If the problem persists, do not use the drive.   |
| Cartridge release lever does not lock.   | Cartridge is not inserted properly.                             | Reinsert the cartridge.   |
| Tape does not load.  |   | Press and release the unload button. Wait for green light to come on before sliding lever and removing tape. If green light blinks, call your service representative. |
| <b>RZ55 Problems</b>   |   |   |
| RZ55 fails system exerciser test and power-up self test.   | Faulty disc drive assembly. No AC power. Faulty cabling.        | Check that all cables are secure. Check to see if the activity light comes on or if the fan is blowing (AC power is present). Call your field service representative. |
| <b>TK50Z Tape Expansion Box Problems</b>   |   |   |
| Unable to access information on tape.  | SCSI ID is incorrectly set.                                     | See Chapter 4.  |
| For other problems, refer to the installation/owner's guide that comes with your TK50Z tape expansion box. |   |   |
| <b>RRD40 Compact Disc Expansion Box Problems</b>   |   |   |
| Refer to the installation/owner's guide that comes with your RRD40 compact disc expansion box.             |   |   |
| <b>Network Problems</b>  |   |   |
| Refer to Chapter 5.  |   |   |

## Power-Up Error Messages

**Note** *If your monitor does not display any information on the screen after the power-up test sequence, you may have a monitor, video, or system board failure. Check your monitor guide for more information.*

The VAXstation 3100 displays important information during its power-up test sequence. If the power-up sequence contains three periods (...) after each device identifier, then the device has passed the power-up test successfully.

F...E...D...C...B...A...9...8...7...6...5...4\_3\_2\_1...

An underline (    ) after a number means that this particular device, as identified in Table 6-2, is not in the system or the device identifier is reserved for future use.

In this example, the underline after the 4 means that this system does not have an optional 8-plane graphics coprocessor. The underline after the 3 and 2 means that these identifiers are reserved.

If there is a problem, the sequence displayed during power-up contains single question marks or asterisks such as:

F\*...E...D...C...B...A...9...8...7...6...5...4...3...2?...1...

A single question mark next to a device identifier means that there may be a faulty device in your system.

An asterisk means that the ROM for the device is corrupted.

Use Table 6-2 to identify the faulty or corrupted device and then do a self-test on that device (see the section Self-Tests).

**Table 6-2 Power-Up and Self-Test Device Identifiers**

| Identifier | Device   |
|------------|--|
| F          | Base video   |
| E          | System clock   |
| D          | Nonvolatile RAM  |
| C          | Serial line controller                                       |
| B          | Memory   |
| A          | Memory-management unit                                       |
| 9          | Floating point unit  |
| 8          | Interval timer   |
| 7          | Device controller (STRG-1) for system with diskette drive    |
| 7          | Device controller (SCSI-A) for system without diskette drive |
| 6          | Device controller (SCSI-A) for system with diskette drive    |
| 6          | Device controller (SCSI-B) for system without diskette drive |
| 5          | Interrupt controller and Ethernet ID ROM                     |
| 4          | Optional 8-plane graphics coprocessor                        |
| 3          | Reserved   |
| 2          | Reserved   |
| 1          | Ethernet network interconnect                                |

Some common power-up status messages are:

**1 Clock not set**

? E 0040 0000.0005

This message indicates that the system clock has not been set. Setting the clock is part of the operating system software installation; see your operating system software documentation for instructions.

**2 Low battery**

? D 0050 0000.0005

This message indicates that the system battery's charge is low or completely discharged. Run the system for about 17 hours to recharge the battery.

**3 Monochrome monitor with 8-plane graphics coprocessor**

? 8 00D0 0009.0213

This message indicates that a monochrome monitor is connected to an 8-plane graphics coprocessor.

**4 No Ethernet cable**

A double question mark indicates a **hard error**. This indicates a serious problem that may affect normal operation and use of some component of the VAXstation 3100. An example is:

?? 1 00C0 0000.7004

Check your system for the following:

- Is the loopback connector attached to the standard Ethernet port?
- Is a T-connector with terminators connected to the ThinWire Ethernet port?
- Is the network select button in the correct position for the type of Ethernet that you have?
- Are there any faulty or loose cables?

Correct the problem and turn off the system and then turn on the system.

If you still get the same error message, you may have a hardware problem with your Ethernet module.

## Self-Tests

Self-tests help you to isolate the problem when calling your service representative. You can run self-tests from the console prompt (>>>).

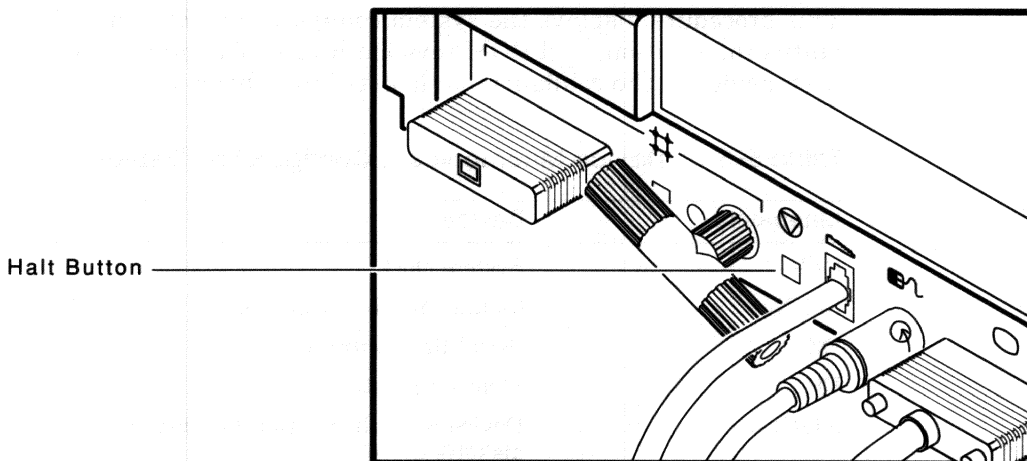
To test a device in your VAXstation 3100, follow these steps:

- 1 Use Table 6-2 to find the number or letter that represents the device you want to test.



- Put the VAXstation 3100 in console mode by pressing the halt button on the rear of the system unit. Use a pen or small pointed object to push the halt button. Read your software documentation for shutdown procedures before halting the system.

**Figure 6-1 Halt Button**



MLO-001766

- Enter **TEST** and a space followed by the test identifier for the device you are testing.

```
>>> TEST 7 [Return]
```

If you want to test a consecutive series of devices, enter **TEST** followed by the first and last test identifier:

```
>>> TEST F 1 [Return]
```

The system displays the number of each device as it is tested, followed by a series of periods.

If the self-test is successful, no question mark or error message is displayed, and the console prompt appears:

```
7...  
>>>
```

If a device fails the self-test, a failure message is displayed before the console prompt is returned.

```
7?...  
84 FAIL  
>>>
```

## Configuration Display

If a self-test results in a failure, call your service representative. Your service representative may ask you to run the following configuration display.

To run the configuration display, enter

```
>>> TEST 50 
```

This procedure displays the system configuration, Ethernet ID, status information, and ROM revision levels. The mnemonic for each device in the configuration is listed in Table 6-3.

**Table 6-3 Device Mnemonics in Configuration Display**

| Mnemonic | Device  |
|----------|---|
| CLK      | System clock  |
| 8PLN     | 8-plane graphics coprocessor                            |
| DZ       | Serial line controller                                  |
| FP       | Floating point  |
| STRG-1   | Device controller option for system with diskette drive |
| SCSI-A   | Device controller option for system with disk drive     |
| SCSI-B   | Device controller option for system with disk drive     |
| IT       | Interval timer  |
| MEM      | Memory  |
| MM       | Memory management                                       |
| MONO     | Monochrome video circuits on system module              |
| NI       | Network interconnect                                    |
| NVR      | Nonvolatile RAM   |
| SYS      | Interrupt controller and Ethernet ID ROM                |

## System Without a Diskette Drive

If you have a system without a diskette drive, you will see a display similar to the following:

KA42-A V1.0

ID 08-00-2B-07-E3-83

```
MONO          0000.0001
CLK           0000.0001
NVR           0000.0001
DZ            0000.0001
00000001 00000001 00000001 00000001 00000001 000012A0
MEM           0008.0001
00800000
MM            0000.0001
FP            0000.0001
IT            0000.0001
SCSI-A        0808.0001  V1.0
  FFFFFFF05 FFFFFFF05 FFFFFFF05 00000001 FFFFFFF05 FFFFFFF05 FFFFFFF03 FFFFFFF05
SCSI-B        1C1C.0001  V1.0
  FFFFFFF05 FFFFFFF05 FFFFFFF05 00000001 05000001 FFFFFFF05 FFFFFFF03 FFFFFFF05
SYS           0000.0001
8PLN          0000.0001  V1.0
NI            0000.0001
>>>
```

## System with a Diskette Drive

If you have a system with a diskette drive, you will see a display similar to the following:

KA42-A V1.0

ID 08-00-2B-07-05-02

```
MONO          0000.0001
CLK           0000.0001
NVR           0000.0001
DZ            0000.0001
00000001 00000001 00000001 00000001 00000001 000012A0
MEM           0008.0001
00800000
MM            0000.0001
FP            0000.0001
IT            0000.0001
STRG-1        7777.0001  V1.0
00000000 00000000 FFFFFFFF 00000000
SCSI-A        0808.0001  V1.0
  FFFFFFF05 FFFFFFF05 FFFFFFF05 00000001 FFFFFFF05 FFFFFFF05 FFFFFFF03 FFFFFFF05
SYS           0000.0000
8PLN          0000.0001  V1.0
NI            0000.0001
>>>
```

## Device Display

To determine the devices installed in your system and where they are located on the SCSI bus, enter

```
>>> SHOW DEVICE 
```

Table 6-4 explains the mnemonics in the next two displays.

**Table 6-4** Device Display Mnemonics

| Mnemonic | Definition                                 |
|----------|--|
| VMS/VMB  | Device numbers for VMS operating system    |
| ULTRIX   | Device numbers for ULTRIX operating system |
| ADDR     | Address                                    |
| DEVTYP   | Device type                                |
| NUMBYTES | Number of megabytes                        |
| RM/FX    | Removable or fixed device                  |
| WP       | Write protected                            |
| DEVNAM   | Device name                                |



## System Without a Diskette Drive

If you have a system without a diskette drive you will see a display similar to the following:

| VMS/VMB      | ULTRIX | ADDR              | DEVTYP | NUMBYTES | RM/FX | WP | DEVNAM |
|--------------|--------|-------------------|--------|----------|-------|----|--------|
| E A0         | SE0    | 08-00-2B-07-E3-83 |        |          |       |    |        |
| DKA300       | RZ3    | A/3/0/00          | DISK   | 104 MB   | FX    |    | RZ23   |
| ...HostID... |        | /6                | INITR  |          |       |    |        |
| KB200        | RZ10   | B/2/0/00          | DISK   | 104 MB   | FX    |    | RZ23   |
| ...HostID... |        | B6                | INITR  |          |       |    |        |

>>>

## System with a Diskette Drive

If you have a diskette drive, you will see a display similar to the following:

| VMS/VMB | ULTRIX | ADDR              | DEVTYP | NUMBYTES | RM/FX | WP | DEVNAM |
|---------|--------|-------------------|--------|----------|-------|----|--------|
| ESA0    | SE0    | 08-00-2B-07-05-02 |        |          |       |    |        |
| DUA2    | RX2    |                   | DISK   |          | RM    |    | RX23   |
| DKA500  | RZ5    | A/5/0/00          | DISK   | 104 MB   | FX    |    | RZ23   |
| DKA600  | RZ6    | A/6/0/00          | DISK   | 104 MB   | FX    |    | RZ23   |

>>>

## System Exerciser

The system exerciser emulates an operating system by the interaction between devices within the system. Use the system exerciser if your system has intermittent problems, or if you see errors associated with 7 or 6 in the power-up displays or self-tests.

If you suspect that there is a problem with a diskette or tape cartridge, use the system exerciser to check the quality of your software media by inserting it into the drive before running the system exerciser.

The system exerciser takes up to 11 minutes to complete, and will not write on any media. To run the system exerciser:



- 1 Put the system in console mode by pressing the halt button on the rear of the system. Read your software documentation for shutdown procedures before pressing the halt button.
- 2 Enter:

```
>>> TEST 0 Return
```

The following display appears on your screen after the system exerciser has run all tests. The 4101.0471 in the fourth column indicates that there is an error in the RRD40 compact disc expansion box. If you get this error message, contact your service representative.

| KA42-A | V1.0 |        | 01        | CU      |            |
|--------|------|--------|-----------|---------|------------|
| F      | 00B0 | MONO   | 0000.0001 | 11 1005 | 0 00:00:35 |
| C      | 0080 | DZ     | 0000.0001 | 14      | 0 00:01:12 |
| B      | 0010 | MEM    | 0137.0001 | 5 00A7  | 0 00:02:02 |
| 7      | 0090 | SCSI-A | F000.0001 | 22 0002 | 0 00:02:23 |
| 6      | 00A0 | SCSI-B | 0000.0001 | 15 0002 | 0 00:02:56 |
|        |      |        | 1100.0001 |         |            |
| ??     |      |        | 4101.0471 |         |            |
|        |      |        | ①         |         |            |
|        |      |        | 6200.0001 |         |            |
|        |      |        | 7200.0001 |         |            |
| 4      | 00D0 | 8PLN   | 0000.0001 | 2       | 0 00:03:55 |
| 1      | 00C0 | NI     | 0000.0001 | 9       | 0 00:04:01 |
| ②      | ③    | ④      |           | ⑤       |            |

- ① RRD40 test disc error code—one of several possible codes
- ② Device identifier
- ③ Status/error indicator
- ④ Mnemonic for the device
- ⑤ Error information for each device

Different graphics tests display on the screen during the system exerciser. Single question marks provide status information and do not interfere with the operation of the system. Double question marks in the final display indicate errors.

If you get double question marks next to the tape drive or diskette drive mnemonic (STRG-1, SCSI-A, or SCSI-B), and you ran the system exerciser with media in the drive, try a different tape cartridge or diskette. Your media may be the source of the problem.

If you get any other double question marks, call your service representative for assistance. Table 6-3 gives the device that corresponds to each mnemonic. Know the mnemonic associated with a question mark in your display when you call your service representative.

## Test Utilities

If an expansion box fails, first check that all cable connections are in place.

### RRD40 Test Disc Utility

The RRD40 compact disc drive is shipped with a test disc to be used when you suspect RRD40 disk drive problems. To test your RRD40, perform the following steps:

- 1 Press the halt button on the back of your system unit. The console prompt (>>>) is displayed on your screen.
- 2 Insert the test disc in the RRD40 following the instructions in Chapter 4.
- 3 Type the TEST 0 command.
- 4 If the 4101.0471 error code is displayed on the screen, there is a problem with the RRD40 compact disc drive. If the 4104.0A71 error code is displayed on the screen, the RRD40 has failed the test. Do not use the drive, call your service representative for assistance. 4200.0001 is a normal response code.

### Erase Disk Utility for Hard Disks

The erase disk utility erases all data on a specified hard disk.

- 1 Press the halt button on the back of your system unit. The console prompt (>>>) is displayed on your screen.
- 2 At the console prompt (>>>), enter SHOW DEVICE and press the Return key.
- 3 Enter the TEST 50 command and press the Return key. See the section Configuration Display for an example of the TEST 50 screen display.
- 4 Identify the SCSI ID of the hard disk you wish to erase.
- 5 Enter TEST 75 and press the Return key.

The following example shows the erase disk utility formatting the hard disk in an RZ55 expansion box. The hard disk is located on SCSI-B bus address ID 1. The formatting procedure completes successfully.

**Caution** *This utility destroys all data on the hard disk.*

```

>>> TEST 75
PV_SCS_FMT_CHN (0=SCSIA, 1=SCSIB)? 1
PV_SCS_FMT_ID (0,1,2,3,4,5,6,7)? 1
PV_SCS_FMT_RUSURE (1/0)? 1
PV_SCS_FMTING.....
PV_SCS_FMT_BBrep1=0
PV_SCS_FMT_SUCC
>>>

```

- ① Select SCSI-A bus or SCSI-B bus. Systems with one SCSI bus do not display this line. In this example, the SCSI-B bus is selected.
- ② Specify the SCSI ID. In this example, SCSI ID 1 is selected.
- ③ Provide verification of your action: 1 = yes; 0 = no.
- ④ Your hard disk is being erased.
- ⑤ The number of bad blocks is listed. 0=success.
- ⑥ Your hard disk has been successfully erased.

The following is an example of running the erase disk utility on the hard disk located at SCSI address ID 3, SCSI-B bus, with an error.

```

>>> TEST 75
PV_SCS_FMT_CHN (0=SCSIA, 1=SCSIB)? 1
PV_SCS_FMT_ID (0,1,2,3,4,5,6,7)? 3
PV_SCS_FMT_RUsure (1/0)? 1
PV_SCS_FMTing.....?
PV_SCS_FMT_ERR#3
>>>

```

Table 6-5 lists all the data erasure messages and gives an explanation for each message.

**Table 6-5 Error Codes for Erase Disk Utility**

| Code | Description  |
|------|--|
| 1    | Illegal unit number entered.                                   |
| 2    | Error occurred during a SCSI bus command.                      |
| 3    | Reassign blocks failed (no more replacement blocks available). |
| 4    | Unit not ready.  |
| 5    | Illegal device type for operation.                             |

## Changing the Keyboard Language

To change your keyboard language after you have turned on your system for the first time, do the following:

**Note** Check your software documentation for shutdown procedures before pressing the halt button on your system.

- 1 Make sure your system is in console mode. Enter

```
>>> TEST 54 
```

The keyboard language menu appears.

- 2 Select a language from the keyboard language menu.

|                            |                              |
|----------------------------|------------------------------|
| 0) Dansk                   | 8) Français (Suisse Romande) |
| 1) Deutsch                 | 9) Italiano                  |
| 2) Deutsch (Schweiz)       | 10) Nederlands               |
| 3) English                 | 11) Norsk                    |
| 4) English (British/Irish) | 12) Português                |
| 5) Español                 | 13) Suomi                    |
| 6) Français                | 14) Svenska                  |
| 7) Français (Canadien)     | 15) Vlaams                   |

```
3 ? >>> 9 
```

In this example, the keyboard language is changed from English (3) to Italiano (9).

## Rebooting the System After Running Tests

While you are running any of the tests or procedures in this chapter, you are in console mode. To resume normal operation of the VAXstation 3100, you must reenter **program mode**. The two ways to do this are:

- 1 Enter **BOOT** at the console prompt and press . The system then searches each device in turn for operating system software.

- 2 Enter **BOOT** followed by a space and the name of the device that contains operating system software, as shown in this example:

```
>>> BOOT DKA300 
```

This procedure lets the system boot the operating system software immediately, without searching.

For more information, see your operating system documentation.

## Summary of Console Commands

A summary of all console commands, and the tests or utility programs they execute, is shown in Tables 6-6 to 6-8.

To see a list of these commands enter **HELP** at the console prompt.

**Table 6-6 Summary of SHOW Commands**

| Command     | Information Displayed                  |
|-------------|--|
| HELP        | All commands                           |
| SHOW BFLG   | Default boot flag                      |
| SHOW BOOT   | Default boot device                    |
| SHOW DEVICE | Boot devices available                 |
| SHOW ETHER  | Hardware Ethernet address              |
| SHOW HALT   | Default action after your system halts |
| SHOW KBD    | Keyboard type selected                 |
| SHOW MEM    | Memory for your system unit            |
| SHOW DEVICE | Boot devices available                 |
| SHOW SCSI A | SCSI-A bus device ID numbers           |
| SHOW SCSI B | SCSI-B bus device ID numbers           |
| SHOW VER    | Version of ROM                         |

**Table 6-7 Summary of SET Commands**

| Command    | Default Set                  |
|------------|------------------------------|
| SET BFLG   | Default boot flags           |
| SET BOOT   | Default boot device          |
| SET HALT   | Default recovery action      |
| SET KBD    | Keyboard language            |
| SET SCSI A | SCSI-A bus device ID numbers |
| SET SCSI B | SCSI-B bus device ID numbers |

**Table 6-8 Summary of Diagnostic Commands**

| Command | Test or Utility Program                  | Type of Device in System      |
|---------|--|-------------------------------|
| TEST F  | Self-test on base video (MONO)           |                               |
| TEST E  | Self-test on system clock (CLK)          |                               |
| TEST D  | Self-test on nonvolatile RAM (NVR)       |                               |
| TEST C  | Self-test on serial line controller (DZ) |                               |
| TEST B  | Self-test on system memory (MEM)         |                               |
| TEST A  | Self-test on memory-management unit (MM) |                               |
| TEST 9  | Self-test on floating point unit (FP)    |                               |
| TEST 8  | Self-test on interval timer (IT)         |                               |
| TEST 7  | Device controller—STRG-1                 | System with diskette drive    |
| TEST 7  | Device controller—SCSI-A                 | System without diskette drive |
| TEST 6  | Device controller—SCSI-A                 | System with diskette drive    |
| TEST 6  | Device controller—SCSI-B                 | System without diskette drive |

(continued on next page)

**Table 6-8 (Cont.) Summary of Diagnostic Commands**

| <b>Command</b> | <b>Test or Utility Program</b>                              | <b>Type of Device in System</b> |
|----------------|---|---------------------------------|
| TEST 5         | Self-test on interrupt controller and Ethernet ID ROM (SYS) |                                 |
| TEST 4         | Self-test on 8-plane option (8PLN)                          |                                 |
| TEST 3         | Reserved  |                                 |
| TEST 2         | Reserved  |                                 |
| TEST 1         | Self-test on the Ethernet circuits (NI)                     |                                 |
| TEST 0         | System exerciser  |                                 |
| TEST 50        | Configuration display                                       |                                 |
| TEST 54        | Change keyboard language                                    |                                 |
| TEST 75        | SCSI disk data eraser                                       |                                 |
| TEST DISC      | Tests RRD40 compact disc drive                              |                                 |



## Service Information

If you have followed the corrective actions listed in this chapter and you continue to have problems with your VAXstation 3100, call your DIGITAL service representative.

Before you call:

- 1** Write down the serial and model numbers of your system. Your system is identified on the back of the system unit with a label: Model: VS42A-xx, is a VAXstation 3100 Model 30 system. Your service representative may need this number when you call. The numbers in place of xx identify the contents of the system unit.
- 2** Make notes based on Table 6-1.  
This information helps your DIGITAL service representative know the state of your system when the problem occurred.
- 3** Be prepared to read information from the screen and to enter commands at the keyboard while you talk to your DIGITAL service representative on the telephone.
- 4** Eight recessed lights on the back of the system unit light up when you turn on the system. Your DIGITAL service representative may ask you to describe which lights are lit on the back of the system unit.

1. The first part of the document discusses the importance of maintaining accurate records.

2. It is essential to ensure that all data is properly documented and stored.

3. Regular audits should be conducted to verify the integrity of the information.

4. The second section covers the various methods used for data collection.

5. These methods include direct observation, interviews, and surveys.

6. Each method has its own strengths and weaknesses, which must be considered.

7. The final part of the document provides a summary of the findings.

---

## Startup Procedures

This appendix describes how to:

- Set the hardware to boot the operating system software automatically from a particular device
- Set your system to have a particular mode of action should the system power down
- Set the default boot flags for your software

For more information on setting your startup procedures, see your operating system installation guide.

### Automatic Booting

Set the default boot device to the disk drive where you installed your operating system software. The VAXstation 3100 will boot from that device at startup. The operating system software should reside in one of the following places:

- On a hard disk in the system unit
- On a hard disk in an expansion box
- On a compact disc drive in an expansion box
- On a remote system that you access through the Ethernet

Table A-1 shows the names assigned to each of the possible devices. The default boot device should be set to one of these.

**Table A-1     SCSI Boot Device Names**

| <b>Device and Location</b>                        | <b>VMS Device Name</b> | <b>ULTRIX Device Name</b> |
|---|------------------------|---------------------------|
| Hard disk in system unit (SCSI-A bus at ID 0-7)   | DKAx00                 | RZx                       |
| Hard disk in system unit (SCSI-B bus at ID 0-7)   | DKBx00                 | RZx                       |
| Hard disk in expansion box (SCSI-B bus at ID 0-7) | DKBx00                 | RZx                       |
| Mass storage on remote system                     | ESA0                   | SE0                       |
| Tape (SCSI-A bus at ID 0-7)                       | MKAx00                 | TZx                       |
| Tape (SCSI-B bus at ID 0-7)                       | MKBx00                 | TZx                       |

To change the default boot device:

**Note** *Check your software documentation for shutdown procedures before halting your system.*

- 1 Check that the system is in console mode. To get the console prompt (>>>), press the halt button on the rear of the system unit.
- 2 At the console prompt, enter SET BOOT and the name of the default boot device where the software will reside and press the Return key. For example,

```
>>> SET BOOT DKA300 
```

## Changing the Default Recovery Action

When you receive your system, it automatically starts up the operating system software every time you power up or in the event of an operating system software failure.

The options you have for setting the default recovery action and what they mean are listed in Table A-2.

**Table A-2 Values for Recovery Action**

| Value | Recovery Action   | Result  | Action                  |
|-------|-------------------|---|-------------------------|
| 1     | Automatic restart | System restarts                                 | None                    |
| 2     | Automatic reboot  | Operating system software reboots automatically | None                    |
| 3     | Automatic halt    | Console prompt appears                          | Enter BOOT <sup>1</sup> |

<sup>1</sup>Enter BOOT or BOOT and the device name, for example, BOOT DKAx00, where the operating system software resides.

If you want to change the default recovery action, follow these steps:

1 Put the VAXstation 3100 in console mode by pressing the halt button on the back of the system unit.

2 At the console prompt, enter the following:

```
>>> SHOW HALT 
```

The value for the default recovery action displays:

```
2  
>>>
```

3 To set the recovery action to automatic restart should the system go down, at the console prompt enter:

```
>>> SET HALT 1 
```

4 To change to automatic reboot, at the console prompt enter:

```
>>> SET HALT 2 
```

5 If you want your system to halt after every power up, at the console prompt, enter:

```
>>> SET HALT 3 
```

## Setting the Default Boot Flags

The default boot flags should be set for the operating system installed on your VAXstation 3100. Consult your operating system documentation for more information. A list of related documentation appears in Appendix E.

To set the default boot flags:

- 1 Check to be sure the system is in console mode. If the console prompt does not appear on the screen, press the halt button on the back of the system unit.
- 2 Get the default boot flag number (a hexadecimal number of up to 8 characters) from your operating system software documentation.
- 3 At the console prompt, enter:

```
>>> SET BFLG default-bootflag-number 
```

Default-bootflag-number is a number you enter for your system. See your software documentation for more information.

- 4 Set the default boot flags for your operating system.

---

## **SCSI IDs**

This appendix contains information common to both the VAXstation 3100 Model 30 and Model 40 systems. The information is for technical users who wish to do custom configurations.

SCSI is the acronym for Small Computer Systems Interface. SCSI 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.

Up to eight SCSI devices can share a SCSI bus (a cable). All data is sent back and forth on the cable. Each SCSI device attached to the cable looks at all the data, but a SCSI device only takes the data that has the proper device identification (called a SCSI ID).

### **SCSI ID Default Settings**

You are responsible for the SCSI ID settings on your equipment. Digital Equipment Corporation sets each SCSI device to a default setting before the equipment leaves the factory. You may never need to change a default setting. Default settings should only be changed when a system is configured with more than one of a particular device.

The SCSI ID numbers are 0 through 7; 7 is the highest ID. The number 7 is reserved for devices requiring the highest priority on the SCSI bus. The number 6 is reserved for the controller. Six IDs (0 through 5) are available for custom configuration.

SCSI default settings for each VAXstation 3100 system are listed in Tables B-1, B-2, and B-3. The identification numbers listed give optimal performance on most systems. However, if you have special performance needs, you can set the identification number on each SCSI device manually. For most applications, SCSI IDs can be set arbitrarily as long as no two devices share the same ID.

Each device has a set of switches or jumpers that can be set for a specific ID. The TK50Z tape drive, the RZ55 hard disk drive, and the RRD40 compact disc drive are mounted in expansion boxes. Each of these devices has external switches which you can set.

The integral RRD40 compact disc drive (Model 40 system only), the RZ22 (Model 30 system only) and RZ23 hard disks, the TZ30 tape drive, and the RX23S diskette drive (Model 30 system only) have internal switches or jumpers that must be reset by your Digital service representative.

## Setting SCSI IDs

Enter TEST 50 at the console prompt (>>>), then press the Return key. Your system configuration is displayed on the screen.

Note that FFFFFFF05 identifies an open ID. Remember—a fully configured Model 30 system contains a controller, one RZ23 hard disk, one TK50Z tape, and one RRD40 compact disc drive on the external SCSI-B bus. This leaves four open IDs. Of these, ID 7 is reserved for devices requiring the highest priority on the SCSI bus.



SCSI-B 1C1C.0001 V1.0  
FFFFFF05 FFFFFFF05 FFFFFFF05 00000001 05020001 01000000 FFFFFFF03 FFFFFFF05

- ① SCSI ID 0 — open
- ② SCSI ID 1 — open
- ③ SCSI ID 2 — open
- ④ SCSI ID 3 — RZ23
- ⑤ SCSI ID 4 — RRD40
- ⑥ SCSI ID 5 — TK50Z tape
- ⑦ SCSI ID 6 — SCSI-B controller
- ⑧ SCSI ID 7 — Reserved

Follow these rules when you set SCSI IDs:

- You can have up to seven devices on one bus.
- Each device must have its own unique identifier.
- You cannot have two devices with the same SCSI ID on the same SCSI bus.
- Each SCSI bus must be terminated. Add a terminator to an unused SCSI port.

**Table B-1 SCSI IDs for VAXstation 3100 Model 30 (with Diskette Drive)**

---

**SCSI-ST506 Option**

---

7 Reserved for expansion  
6 SCSI Adapter  
5 TZ30, TK50Z, RX23S  
4 RRD40 expansion box  
3 RZ22 (paging and swapping disk), RZ23  
2 RZ22, RZ23  
1 Reserved for expansion  
0 Reserved for expansion

---

**Table B-2 SCSI IDs for VAXstation 3100 Model 30**

| SCSI-A Internal Bus        | SCSI-B External Bus      |
|----------------------------|--------------------------|
| 7 Unused                   | 7 Reserved for expansion |
| 6 SCSI A adapter           | 6 SCSI-B adapter         |
| 5 TZ30, RX23S              | 5 TK50Z expansion box    |
| 4 Unused                   | 4 RRD40 expansion box    |
| 3 RZ22, RZ23 (system disk) | 3 RZ22, RZ23             |
| 2 Unused                   | 2 Reserved for expansion |
| 1 Unused                   | 1 Reserved for expansion |
| 0 Unused                   | 0 Reserved for expansion |

**Table B-3 SCSI IDs for VAXstation 3100 Model 40**

| SCSI-A Internal Bus        | SCSI-B External Bus               |
|----------------------------|-----------------------------------|
| 7 Unused                   | 7 Reserved for expansion          |
| 6 SCSI-A adapter           | 6 SCSI-B adapter                  |
| 5 TZ30                     | 5 TK50Z expansion box             |
| 4 Unused                   | 4 RRD40 internal or expansion box |
| 3 RZ22, RZ23 (system disk) | 3 RZ22, RZ23                      |
| 2 Unused                   | 2 RZ22, RZ23                      |
| 1 Unused                   | 1 Reserved for expansion          |
| 0 Unused                   | 0 Reserved for expansion          |

**Note** *Proper operation of the SCSI bus requires that high-quality, properly configured cables and connectors be used to connect all devices. It is recommended that only DIGITAL-supplied cable assemblies intended for interconnecting SCSI devices be used. This ensures that the impedance characteristics, signal propagation velocity, inductance, capacitance, cross-talk, grounding, conductor pairing, and shielding meets the requirements for proper operation of the bus. In addition, it is recommended that all units on the SCSI bus be powered from a common AC power source. The proper operation of any SCSI bus that uses cable assemblies not supplied by DIGITAL, or that are not configured in accordance with DIGITAL's recommendations, is not guaranteed.*

## Setting SCSI Switches

The switch positions shown in the following tables are the recommended switch positions for each expansion box.

**Table B-4 RRD40 Expansion Box SCSI IDs and Switch Positions**

| SCSI ID Address<br>on SCSI-B Bus | Switch Positions — Switches 1, 2, 3, and 4 |      |      |          |
|----------------------------------|--|------|------|----------|
|                                  | 1  | 2    | 3    | 4        |
| 0                                | Down                                       | Down | Down | Not used |
| 1                                | Down                                       | Down | Up   | Not used |
| 2                                | Down                                       | Up   | Down | Not used |
| 3                                | Down                                       | Up   | Up   | Not used |
| 4                                | Up   | Down | Down | Not used |
| 5                                | Up   | Down | Up   | Not used |
| 6                                | Up   | Up   | Down | Not used |
| 7                                | Up   | Up   | Up   | Not used |

**Table B-5 RZ55 Expansion Box SCSI IDs and Switch Positions**

| SCSI ID Address<br>on SCSI-B Bus | Switch Positions — Switches 1, 2, and 3 |      |      |
|----------------------------------|---|------|------|
|                                  | 1                                       | 2    | 3    |
| 0                                | Down                                    | Down | Down |
| 1                                | Down                                    | Down | Up   |
| 2                                | Down                                    | Up   | Down |
| 3                                | Down                                    | Up   | Up   |
| 4                                | Up                                      | Down | Down |
| 5                                | Up                                      | Down | Up   |
| 6                                | Up                                      | Up   | Down |
| 7                                | Up                                      | Up   | Up   |

**Table B-6 TK50Z Expansion Box SCSI IDs and Switch Positions**

| SCSI ID Address<br>on SCSI-B Bus | Switch Positions — Switches 1, 2, and 3 |      |      |
|----------------------------------|---|------|------|
|                                  | 1                                       | 2    | 3    |
| 0                                | Up                                      | Up   | Up   |
| 1                                | Up                                      | Up   | Down |
| 2                                | Up                                      | Down | Up   |
| 3                                | Up                                      | Down | Down |
| 4                                | Down                                    | Up   | Up   |
| 5                                | Down                                    | Up   | Down |
| 6                                | Down                                    | Up   | Down |
| 7                                | Down                                    | Down | Down |

This appendix describes the hardware options available for your VAXstation 3100.

## Hard Disk Drives

A hard disk drive stores information on a nonremovable disk. Internal hard disks available for the VAXstation 3100 are the RZ22 and RZ23. One or two hard disks can be installed inside the system unit. Contact your DIGITAL sales representative if you wish to add an RZ22 or RZ23 disk drive to your system unit. The RZ55 hard disk is available in an expansion box. Table C-1 lists the hard disks available for your system.

**Table C-1**     **Hard Disk Drives**

| Disk Type | Storage Available | Location      |
|-----------|-------------------|---------------|
| RZ22      | 52 MB             | Integral      |
| RZ23      | 104 MB            | Integral      |
| RZ55      | 332 MB            | Expansion box |

## Printers

Table C-2 lists the printers available for the VAXstation 3100 system.

**Table C-2 Printers**

| <b>Printer</b>                    | <b>Description</b>   |
|-----------------------------------|--|
| LN03                              | Desktop laser printer  |
| LN03 PLUS                         | Enhanced LN03; prints text and graphics                              |
| LN03R ScriptPrinter               | Nonimpact page printer; prints PostScript text and graphics          |
| LA100                             | Desktop dot matrix printing terminal                                 |
| LA75 Companion Printer            | Desktop dot matrix printer, sixel graphics                           |
| LPS20 PrintServer                 | Networked PostScript printer   |
| LPS40 PrintServer                 | Networked PostScript printer   |
| LJ250/252 Companion Color Printer | Desktop dot matrix color, serial (LJ250) or parallel (LJ252) printer |

## Connecting a Printer

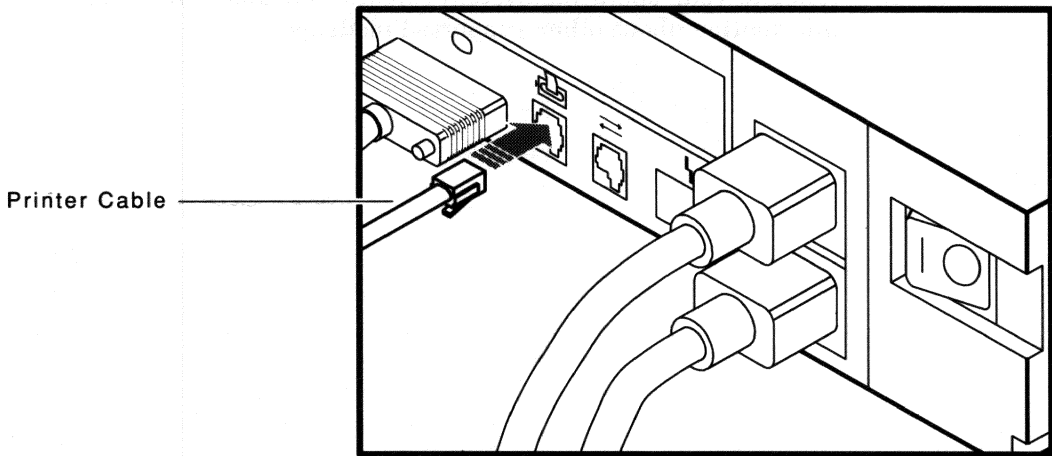
You will need to order a serial line cable to connect a printer to your system.

To connect a printer:

- 1 Use the documentation that shipped with the printer to:
  - Unpack and set up the printer
  - Set the **baud rate** on your printer to 4800 baud before connecting it to your VAXstation 3100
- 2 Make sure that the printer and the system unit are off.
- 3 Attach one end of the printer cable to the back of the printer. (Check the documentation that shipped with the printer.)
- 4 Attach the serial line cable to the other end of the printer cable.
- 5 Attach the free end of the serial line cable to the printer port on the back of the system unit, as shown in Figure C-1.



Figure C-1 Connecting a Printer



MLO-001012

# Modems

Table C-3 lists the modems available for the VAXstation 3100. You will need to order a serial line cable to connect a modem to your system.

The communications port on the back of the system unit comes set at 1200 baud. Refer to your modem documentation for the correct baud needed for your modem.

**Table C-3 Modems**

| <b>Modem</b>       | <b>Description</b>   |
|--------------------|--|
| DF242 Scholar Plus | 300, 1200, and 2400 bps (bits per second) full duplex asynchronous |
| DF224              | 300, 1200, and 2400 bps full-duplex asynchronous                   |
| DF212              | 300, 600, and 1200 bps full-duplex asynchronous                    |
| DF112              | 300 and 1200 bps full-duplex asynchronous                          |
| DF03               | 300 and 1200 bps full-duplex asynchronous                          |

Refer to your operating system software documentation for information about other supported modems.



## Connecting a Modem

To connect your modem:

- 1 Make sure that the modem and the system unit are off.
- 2 Follow the directions that come with your modem to set it up.
- 3 Use your modem guide to clear the Force DSR attribute on your modem. (By clearing the Force DSR attribute, your system will recognize the loss of modem connection, should this occur.)
- 4 Attach the 25-pin D-sub adapter to the back of the modem.
- 5 Attach one end of the serial line cable to the 25-pin D-sub adapter.
- 6 Attach the free end of the serial line cable to the communications port on the back of the system unit, as shown in Figure C-2.

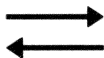
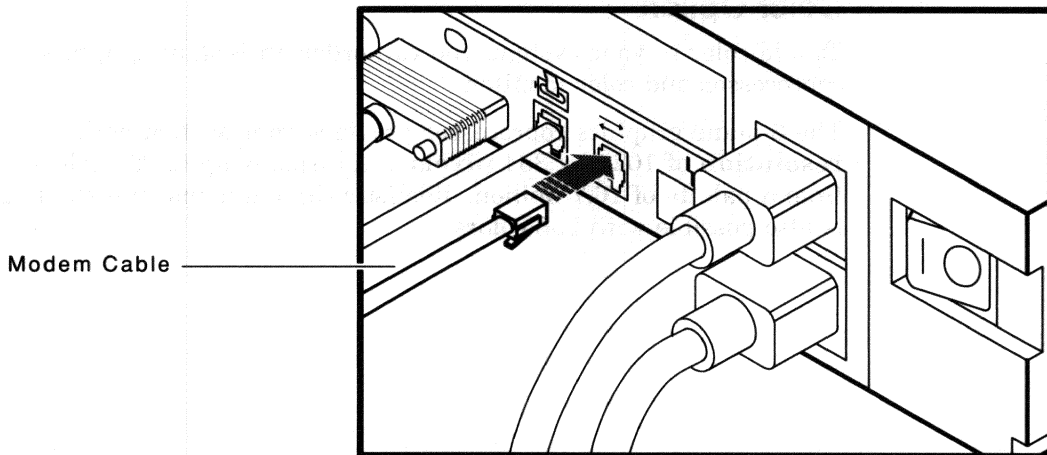


Figure C-2 Connecting a Modem



MLO-001011

## Tablet

The tablet with the puck or stylus may be used as a pointing device instead of the mouse for menu selection, graphics entry, and pointer control. The VSxxx-AB tablet system consists of a digitizing tablet, a 4-button **puck**, a 2-button **stylus**, and a 1.5 meter (5 foot) power/signal cable.

## Monitors

Several monitors are available for the VAXstation 3100. Contact your DIGITAL sales representative for more information.

### Cable Option

If you need to place your system unit away from your monitor, order a long monitor cable.

To connect a long monitor cable to your monitor, follow the directions in your monitor guide. You can connect the keyboard and mouse either to the monitor cable as shown in the monitor book or to the back of the system unit as shown in Chapter 2 in this manual.

### Color Option

To add color to your system, you can order an 8-plane graphics coprocessor and color monitor.

The 8-plane graphics coprocessor provides your system with a **resolution** of 1024 by 864 **pixels** and displays up to 256 colors from a palette of 16.7 million. Realistic three-dimensional shading is also possible with 256 colors.

## Hardware Specifications

**Table D-1 System Unit (Diskless) Dimensions**

| <b>Weight</b>     | <b>Height</b>     | <b>Width</b>          | <b>Depth</b>       |
|-------------------|-------------------|-----------------------|--------------------|
| 7.7 kg<br>(17 lb) | 10.3 cm<br>(4 in) | 46.2 cm<br>(18.12 in) | 40 cm<br>(15.5 in) |

**Table D-2 System Specifications**

| <b>Subject</b> | <b>Description</b>   |
|----------------|--|
| Processor      | KA42-AA 90 ns CPU  |
| DRAM memory    | 8 MB on board  |
| ROM memory     | 256 KB   |
| Coprocessor    | Optional 8-plane graphics coprocessor  |
| Hard Disk      | Options include one or two 52 MB integral hard disks, one or two 104 MB integral hard disks, and 332 MB hard disk expansion box.   |
| Monitor        | Options include 38 cm (15 in) monochrome or color, 1024-by-864-pixel; 48 cm (19 in) monochrome or color, 1024-by-864-pixel<br>For hardware specifications, see your monitor guide. |
| Interfaces     | 1 SCSI/ST506 or 1 SCSI/SCSI port, 1 ThinWire Ethernet port, 1 standard Ethernet port   |

**Table D-3 System Storage Conditions**

---

|                              |                                |
|------------------------------|--------------------------------|
| Temperature range            | 5° C to 50° C (41°F to 122° F) |
| Relative humidity            | 10% to 95% (non-condensing)    |
| Altitude                     | 0 to 2400 m (0 to 8000 ft)     |
| Maximum wet bulb temperature | 32° C (90° F)                  |
| Minimum dew point            | 2° C (36° F)                   |

---

**Table D-4 System Operating and Nonoperating Conditions**

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**Operating Conditions**

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|                              |  |
|------------------------------|--|
| Temperature range            | 10° C to 40° C (50° F to 104° F)         |
| Temperature change rate      | 11° C (20° F) deg/hour maximum           |
| Relative humidity            | 10% to 90% (non-condensing, no diskette) |
| Altitude                     | 2400 m (8000 ft)                         |
| Maximum wet bulb temperature | 28° C (82° F)                            |
| Minimum dew point            | 2° C (36° F)                             |

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**Nonoperating Conditions**

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|                              |                                     |
|------------------------------|-------------------------------------|
| Temperature range            | -40° C to 66° C (-40° F to -151° F) |
| Relative humidity            | 95% @ 66° C (may condense)          |
| Altitude                     | 4900 m (16,000 ft)                  |
| Maximum wet bulb temperature | 28° C (82° F)                       |
| Minimum dew point            | 2° C (36° F)                        |

---

**Table D-5 System Electrical Specifications**

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|               |  |
|---------------|--|
| Input voltage | Automatically adjusting AC input from 120 VAC to 240 VAC |
| Frequency     | 47 to 60 Hz  |

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**Table D-6 RZ22/23 Hard Disk Drive Specifications**

| <b>Physical Dimensions</b>        | <b>RZ22</b>         | <b>RZ23</b>         |
|-----------------------------------|---------------------|---------------------|
| Weight                            | .780 kg (1.72 lbs)  | .826 kg (1.82 lbs)  |
| Height                            | 41.28 mm (1.625 in) | 41.28 mm (1.625 in) |
| Width                             | 101.6 mm (4.00 in)  | 101.6 mm (4.00 in)  |
| Depth                             | 146.05 mm (5.75 in) | 146.05 mm (5.75 in) |
| <b>Formatted Storage Capacity</b> | <b>RZ22</b>         | <b>RZ23</b>         |
| Per drive                         | 52 MB               | 104 MB              |
| Per surface                       | 13 MB               | 13 MB               |
| Bytes per track                   | 16,896              | 16,896              |
| Bytes per block                   | 512                 | 512                 |
| Blocks per track                  | 33                  | 33                  |
| Blocks per drive                  | 102,432             | 204,864             |
| Spare blocks per track            | 1                   | 1                   |
| Spare blocks per drive            | 3104                | 6208                |
| <b>Performance</b>                | <b>RZ22</b>         | <b>RZ23</b>         |
| Transfer rate to/from media       | 1.25 MB/sec         | 1.25 MB/sec         |
| Transfer rate to/from buffer      | 1.25 MB/sec         | 1.25 MB/sec         |
| Seek time track to track          | ≤ 8 msec            | ≤ 8 msec            |
| Seek time average                 | ≤ 25 msec           | ≤ 25 msec           |
| Seek time maximum (full stroke)   | ≤ 45 msec           | ≤ 45 msec           |
| Average latency                   | 8.4 msec            | 8.4 msec            |
| Rotational speed                  | 3575 RPM ±0.1%      | 3575 RPM ±0.1%      |
| Start time (maximum)              | 20 sec              | 20 sec              |
| Stop time (maximum)               | 20 sec              | 20 sec              |
| Interleave                        | 1:1                 | 1:1                 |

| <b>Environmental Specifications</b> | <b>Operating</b>  | <b>Nonoperating</b>   |
|-------------------------------------|---|-----------------------|
| Ambient temperature                 | 10° C to 60° C  | -40° C to 66° C       |
| Relative humidity                   | 8% to 80%   | 8% to 95% (packaged)  |
| Altitude                            | -1000 ft to 10,000 ft                                     | -1000 ft to 40,000 ft |
| Maximum wet bulb<br>(noncondensing) | 25.6° C (78° F)   | 46° C (115° F)        |
| Heat dissipation                    | 8 W (typical) (27.36<br>Btu/hr) 9 W max. (30.8<br>Btu/hr) | N/A                   |
| Temperature gradient                | 11° C/hr (20° F/hr)                                       | 20° C/hr (36° F/hr)   |

**Table D-7 RX23 Diskette Drive Specifications**

| <b>Subject</b>                     | <b>Description</b> |
|------------------------------------|--------------------|
| Diskette size                      | 9 cm (3.5 in)      |
| Diskettes/diskette drive           | 1                  |
| Data capacity                      | 1.2 MB (RX23K)     |
| Track density                      | 135 TPI            |
| Storage capacity (high<br>density) | 600 KB             |

**Table D-8 RZ55 Hard Disk Drive Dimensions**

| <b>Weight</b>      | <b>Height</b>     | <b>Width</b>        | <b>Depth</b>        |
|--------------------|-------------------|---------------------|---------------------|
| 13.2 kg<br>(29 lb) | 14 cm<br>(5.5 in) | 33 cm<br>(12.75 in) | 29 cm<br>(11.25 in) |

**Table D-9 RZ55 Hard Disk Drive Specifications**

| <b>Subject</b>                               | <b>Description</b>     |
|--|------------------------|
| Formatted capacity per drive                 | 332.30 MB              |
| Formatted capacity per surface               | 2.48 MB                |
| Formatted capacity per track                 | 18,432                 |
| Formatted capacity per block                 | 512 bytes              |
| Formatted blocks per track                   | 36                     |
| Formatted blocks per drive                   | 649,040                |
| Formatted capacity spare blocks per cylinder | 8                      |
| Formatted capacity spare blocks per drive    | 10300 MB               |
| Transfer rate to from media                  | 1.25 MB/sec            |
| Performance bus asynchronous mode            | 1.50 MB/sec            |
| Performance bus synchronous mode             | 4 MB/sec               |
| Performance seek time track to track         | <= 4 milliseconds      |
| Performance seek time average                | <= 16 milliseconds     |
| Performance seek time maximum                | <= 35 milliseconds     |
| Average rotational latency                   | 8.3 milliseconds       |
| Rotational speed                             | 3600 RPM               |
| Start time                                   | 20 seconds maximum     |
| Stop time                                    | 20 seconds maximum     |
| Interleave                                   | 1:1                    |
| Bus latency                                  | 600 microseconds       |
| Input current                                | 2.4 Amps @ 100-120 VAC |
| Frequency                                    | 50-60 Hz               |
| Power  | 160 Watts              |

**Table D-10 RZ55 Hard Disk Drive Environmental Specifications**

|                     | <b>Operating</b>                 | <b>Nonoperating</b>                 |
|---------------------|----------------------------------|-------------------------------------|
| Ambient temperature | 10° C to 50° C (50° F to 122° F) | -40° C to 66° C (-40° F to 150° F)  |
| Relative humidity   | 8% to 80% (noncondensing)        | 8% to 95%                           |
| Altitude            | 0 to 4600 m (0 to 15000 ft )     | 0 to xxxxx m (-1000 ft to 40000 ft) |
| Maximum wet bulb    | 25.6° C (46° F)                  | 46° C (82.8° F)                     |

**Table D-11 TZ30 Tape Drive Specifications**

| <b>Subject</b>          | <b>Description</b>                          |
|-------------------------|---|
| Mode of operation       | Streaming                                   |
| Media                   | 12.77 mm (0.5 in) unformatted magnetic tape |
| Bit density             | 2624 bits/cm (6667 bits/in)                 |
| Number of tracks        | 22  |
| Transfer rate (at host) | 62.5 KB per second                          |
| Tape speed              | 190 cm/sec (75 in/sec)                      |
| Track format            | Multiple track serpentine recording         |
| Cartridge capacity      | 95 MB, formatted (approx.)                  |



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## Associated Documents

For option and system hardware part numbers, consult your DIGITAL sales representative.

Not all the following documents are available in every country. Check with your DIGITAL sales representative for availability.

**Table E-1 Associated Documents**

| <b>Titles</b>   | <b>Order Numbers</b> |
|---|----------------------|
| <b>VAXstation 3100 Family</b>                                     |                      |
| <i>VAXstation 3100 Planning and Preparation</i>                   | EK-286AA-RC          |
| <i>VAXstation 3100 Maintenance Guide</i>                          | EK-285AA-MG          |
| <i>VAXstation 3100 Illustrated Parts Book</i>                     | EK-288AA-IP          |
| <i>VAXstation 3100 Model 30 Desktop-VMS Basic System Guide</i>    | EK-259AA-UG          |
| <i>VAXstation 3100 Model 30 Desktop-VMS Advanced System Guide</i> | EK-260AA-OM          |
| <i>VAXstation 3100 Model 40 Desktop-VMS Management Guide</i>      | EK-261AA-OM          |
| <i>VAXserver 3400 Model 640QS Desktop-VMS Management Guide</i>    | EK-259AA-OM          |

(continued on next page)

**Table E-1 (Cont.) Associated Documents**

| <b>Titles</b>   | <b>Order Numbers</b> |
|---|----------------------|
| <b>Microcomputer Handbook Series</b>                              |                      |
| <i>Microcomputer Interfaces Handbook</i>                          | EB-20175-20          |
| <i>Microcomputers and Memories Handbook</i>                       | EB-18451-20          |
| <i>Technical Summary of Digital's VAXstation Family</i>           | EB-29389-51          |
| <b>Printers</b>   |                      |
| <i>Installing and Using the LN03</i>                              | EK-0LN03-UG          |
| <i>LN03 PLUS User Guide</i>                                       | EK-LN03S-UG          |
| <i>LN03R ScriptPrinter Installation Guide</i>                     | EK-LN03R-UG          |
| <i>LN03R ScriptPrinter Operator Guide</i>                         | EK-LN03R-OG          |
| <i>LA100 Letterwriter User Documentation Kit</i>                  | EK-LW100-UG          |
| <i>Installing and Using the LA75 Companion Printer</i>            | EK-OLA75-UG          |
| <i>Installing and Using the LJ250/252 Companion Color Printer</i> | EK-LJ250-DK          |
| <i>LPS20 PrintServer User Guide</i>                               |                      |
| <i>LPS40 PrintServer User Guide</i>                               |                      |
| <b>RRD40 Disc Drive</b>   |                      |
| <i>RRD40 Disc Drive Owner's Manual</i>                            | EK-RRD40-OM          |
| <b>TZ30 Tape Drive</b>  |                      |
| <i>TZ30 Cartridge Tape Drive Subsystem Owner's Manual</i>         | EK-OTZ30-OM          |
| <i>TZ30 Cartridge Tape Drive Subsystem Service Manual</i>         | EK-OTZ30-SM          |
| <i>TZ30 Cartridge Tape Drive Subsystem Reference Card</i>         | EK-OTZ30-RC          |

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**Table E-1 (Cont.) Associated Documents**

| <b>Titles</b>   | <b>Order Numbers</b> |
|---|----------------------|
| <b>TK50Z Tape Drive</b>   |                      |
| <i>TK50Z Tape Drive Subsystem Owner's Manual</i>  | EK-LEP05-OM          |
| <i>TK50Z User's Guide</i>   | EK-OTK50-UG          |
| <i>TK50Z Technical Manual</i>   | EK-OTK50-TM          |
| <b>DECconnect System</b>  |                      |
| <i>DECconnect System General Description</i>  | EK-DECSY-GD          |
| <i>DECconnect System Requirements Evaluation Workbook</i>                               | EK-DECSY-EG          |
| <i>DECconnect System Installation and Verification Guide</i>                            | EK-DECSY-VG          |
| <i>DECconnect System Stand-alone ThinWire Networks: Planning and Installation Guide</i> | EK-DECSY-TG          |
| <i>DECconnect System Planning and Configuration Guide</i>                               | EK-DECSY-CG          |



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# Glossary

## **application program**

A program, such as a financial spreadsheet program, that performs an end-user task.

## **architecture**

The internal configuration of a computer (processor) including its registers, instruction set, and input/output structure.

## **ANSI**

American National Standards Institute.

## **ASCII**

American Standard Code for Information Interchange. A set of 7- or 8-bit binary numbers representing the alphabet, punctuation, numerals, and other special symbols used in text representation and communications protocol.

## **backup**

A copy of files or software made for safekeeping in a backup operation.

## **backup process**

The process of making copies of the data stored on your disk so that you can recover that data after an accidental loss. You make backup copies on tape cartridges, or over a network using the Remote System Manager.

**bad blocks**

A damaged block on a disk that the system cannot access. Blocks become damaged from wear or abuse.

**barrel connector**

A female connector for connecting two sections of ThinWire cable.

**batch queue**

A series of tasks that the computer processes in a certain order, without user interaction.

**baud rate**

The speed at which signals are serially transmitted along a communications line. One baud equals 1 bit per second.

**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.

**block**

A standard unit of storage space on a disk or tape surface; 512 bytes. Although a drive writes data to the disk or tape 1 byte at a time, a block is the smallest amount of space on a disk or tape that the system can access.

**BNC connector**

See **connector**.

**boot**

To bring a device or system to a defined state where it can operate on its own.

**bootable medium**

A fixed disk, an optical disk, or magnetic tape cartridge containing operating system software that can be loaded into memory and executed.

**boot device**

The device on which the operating system is loaded.

**boot node**

The management center for a work group and its major resource provider.

**bootstrap**

See **boot**.

**BOT**

Beginning of tape. See **drive leader**.

**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 word.

**cable**

A sheathed group of electrical conductors.

**caddy**

The holder for the compact disc.

**cartridge insert/release 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.

**cartridge leader**

See **drive leader**.

**CD**

See **compact disc**.

**central processing unit (CPU)**

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

**client**

Hardware or software that obtains a specific set of services from a server.

**cluster**

A group of computers networked together that share disk storage, application programs, and other computer resources. Also called a VAXcluster.

**coaxial cable**

A two-conductor, concentric, constant impedance transmission cable.

**command**

A request you make to the operating system to perform a specific function. For example, a request to run a program.

**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.

**compact disc**

A flat circular plate on which read-only optical data is stored. A laser optical reader, also called a compact disc, retrieves this information.

**computer system**

A combination of system hardware, software, and external devices that performs operations and tasks.

**configuration**

See **system configuration**.

**connector**

A BNC-style connector that connects a section of ThinWire cable to a T-connector, to a system, or to a barrel connector.



**console**

A device through which an operator communicates with the computer.

**console mode**

The state in which the computer is controlled from the console terminal. Your system can be put in console mode by pressing the halt button on the rear panel of the system unit. Console mode is indicated by the console prompt (>>>) on the monitor screen. Compare **program mode**.

**console prompt**

A prompt used for communication between the user and the computer.

**controller**

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

**CPU**

See **central processing unit**.

**cursor**

A blinking line or figure on the screen that indicates where the next character the user types will appear.

**daisy-chain**

To link computers or expansion boxes sequentially.

**data**

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

**data transmission**

The movement of data in the form of electrical signals along a communications line.

**debug**

To detect, locate, and correct errors (bugs) in hardware or software.

**DECconnect**

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

**DECconnect faceplate**

See **faceplate**.

**DECnet**

DIGITAL networking software that runs on nodes in both local and wide area networks.

**default**

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

**DEMPR**

A multiport 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 icon**

An icon on the back of the system unit that identifies the device that can be plugged into the connector.

**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.

**disc**

See **compact disc**.

**disk**

A flat circular plate with a coating on which data is magnetically stored in concentric circles (tracks). A fixed 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.

**diskette**

A flexible disk contained in a square jacket. Diskettes can be inserted and removed from diskette drives.

**diskette drive**

A disk drive that only reads or writes on removable diskettes.

**diskless system**

A VAXstation 3100 Model 30 system that has no storage capacity of its own.

**disk server**

A hardware system designed to provide operating system and data storage for other users.

**display screen**

See **monitor**.

**down-line load**

To send a copy of a system image or other file over a communications line to the memory of a target node.

**drive leader**

A plastic leader inside the TZ30 tape drive. The cartridge leader on the magnetic tape and the drive leader on the tape drive mate. The drive leader draws the magnetic tape out of the tape cartridge and onto a take-up reel inside the drive. As the tape is wound onto the take-up reel, it passes the magnetic read and write heads.

**error message**

A message displayed by a system to indicate a mistake or malfunction.

**Ethernet**

A type of local area network based on Carrier Sense Multiple Access with Collision Detection (CSMA/CD). A communications concept for local communication networks that use coaxial cable.

**faceplate**

A wall receptacle that provides a single network connection for your workstation.

**firmware**

Software that is stored in a fixed or wired-in way, usually in read-only memory.

**fixed disk**

See **disk**.

**floppy disk**

See **diskette**.

**footprint**

The amount of physical space needed for a computer and its devices.

**format**

To prepare a diskette to accept data.

**formatted data**

Data structured in a pattern understood by the system software.

**formatting**

An operation that divides a disk's magnetic surface into segments in a specific pattern. Formatting allows the drive to read and write useful data to the disk.

**graphics**

Computer output of drawings, charts, and graphs.

**graphics coprocessor**

A special-purpose CPU, with its own set of commands, data formats, and an instruction counter, which executes a sequence of display instructions to create a drawing or graph on the display device.

**ground**

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

**H4000**

An Ethernet transceiver used to connect standard Ethernet communications equipment to standard Ethernet. The H4000 supports a heartbeat signal used in network diagnostics.

**hard disk**

A hard disk resides permanently inside a disk drive. Compare to diskette.

**hard error**

A non-recoverable error.

**hardware**

The physical equipment—mechanical and electrical—that make up a system. Compare to software.

**hardware Ethernet address**

The unique Ethernet physical address associated with a particular Ethernet communications controller.

**head**

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

**Help Menu**

A pull-down menu that allows you to access a help facility associated with a specific application.

**host system**

The primary or controlling computer in a multiple computer network.

**housing**

The plastic case in which a compact disc sits.

**I/O device**

See **input/output (I/O) device**.

**icon**

A graphic representation of an object, application, or window.

**IEEE**

Institute of Electrical and Electronics Engineers.

**Initialize**

To prepare a new disk or diskette for use. Initializing erases any files stored on the disk or diskette.

**input/output (I/O) device**

A piece of equipment that accepts data for transmission to (input) and from (output) the system. For example, a terminal.

**interactive**

A method of communicating with the system. In an interactive session, you enter a command at the keyboard and the system executes the command and responds with a prompt character for another command.

**interface**

(1) an electronic circuit board that links an external device to a computer. (2) A device or piece of software that allows the components of the system to communicate with each other.

**kilobyte (KB)**

When referring to memory or secondary storage capacity, 1024 bytes.

**LAVc**

See **local area VAXcluster**.

**LED**

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

**link**

A communication path between two nodes. A physical link is the electrical connection between two nodes. A logical link implies that two nodes are able to communicate whether or not they have a direct physical link.

**load**

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

**load device**

The drive that holds the distribution media during software installation.

**local**

In close proximity to the computer. Compare **remote**.

**local area network (LAN)**

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 communication network whose speed is upward of 1 megabit per second.

**local area VAXcluster (LAVc)**

A group of two or more computers connected by an Ethernet cable or computer-interconnect. In a LAVc, one computer serves the other computers (the server), and starts the other computers and manages the resources that they share.

**local device**

A disk drive, tape drive, or other device that is only available to the computer to which it is connected.

**log in**

To identify yourself to the operating system. When you log in, you type an account name and password. If the name and password match an account on the system, you are allowed access to that account.

**magnetic tape**

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

**megabyte (MB)**

A unit of measure equal to 1,000 kilobytes or 1,048,576 bytes.

**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.

**modem**

A device that converts computer signals to signals that can be sent over a telephone line.

**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.

**monitor**

A video device that displays data.

**mouse**

A hand-held input device that is moved across the desktop to move the pointer or mouse cursor on the monitor screen and that is used to select menu options and draw graphics. The mouse is palm-sized and contains three buttons (function keys).

**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.



**multitasking**

- Declaring parts of an application to execute concurrently with each other and with the main program.

**network**

- Two or more computers linked by communication lines to share information and resources.

**network coordinator**

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

**node**

A computer, workstation, or peripheral device that is connected to a network, and can communicate with other members of the network.

**operating system**

An integrated collection of programs that controls the execution of computer programs and that performs system functions.

**optical disc**

See **compact disc**.

**output device**

A device that accepts data from the system. For example, a printer.

**password**

A unique string of characters and/or numbers that identifies you to the computer.

**peripheral device**

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

**pixel**

A picture element. A location on the monitor screen that can be selectively turned on or off. The basic unit of a graphic display.

**plotter**

- A device to construct visual representations of data by an automatic pen or pencil. Plotters can also receive plotting coordinates from digital computers.

**pointing device**

A terminal input device that allows you to make a selection from a menu or to draw graphics. See **mouse** and **tablet**.

**port**

- The name of the socket at the back of the computer to which a terminal, printer, or other communication device is connected.

**power-up sequence (power up)**

A series of ordered events that occur when you supply power by turning on the system.

**print queue**

A group of items waiting to be printed by a printer. The arrangement of items determines the processing priority.

**process**

A program currently using memory and running on the system.

**program**

The sequence of instructions the system uses to perform a task. See **software**.

**program mode**

The state in which the computer is controlled by the operating system. After the operating system is installed, the system will always operate in program mode unless you put it into console mode. Compare **console mode**.

**prompt**

A brief message printed or displayed by a program or an operating system, asking you to provide input.

**public device**

A disk drive, tape drive, or other device available to computers that are not directly connected to it. In a VAXcluster, computers access public devices across a local area network.

**puck**

A palm-sized device that slides on a tablet's surface. The puck and tablet together function as a pointing device. See **pointing device** and **tablet**.

**queue**

A list of items or tasks to be processed in a certain order. See **batch queue** and **print queue**.

**RAM**

See **random-access memory**.

**random-access memory (RAM)**

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

**read-only memory (ROM)**

Memory that cannot be modified. The system can use (read) the data contained in ROM but cannot change it.

**remote**

Linked to a computer by communication lines. Compare **local**.

**remote install**

See **down-line load**.

**resolution**

A measure of the precision or sharpness of a graphic image. Often a function of the number of pixels on a screen.

**restore**

To recover files or software that has been backed up, copying the material from the backup medium (such as a tape or diskette) to the medium you normally use.

**ROM**

See **read-only memory (ROM)**.

**run**

A single continuous execution of a program (noun). To execute a program (verb).

**runtime**

The amount of computing time a program requires to be carried out.

**satellite node**

A node that is booted remotely from the system disk on the boot node. A computer system that obtains a specific set of services from a server system.

**SCSI**

See **Small Computer System Interface**.

**section**

A single length of ThinWire Ethernet cable terminated at each end with a connector.

**segment**

A length of ThinWire Ethernet cable made up of one or more cable sections connected with barrel connectors or T-connectors.

**server**

Hardware or software that provides a specific set of services to a satellite or client.

**server node**

In a VAXcluster, a computer that is used to start the satellite nodes and to manage their use of common resources.

**Small Computer System Interface (SCSI)**

An interface designed for connecting disks and other peripheral devices to computer systems. SCSI, pronounced "skuh-zee," is defined by an ANSI standard and is used by many computer and peripheral vendors throughout the industry.

**software**

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

**standalone workstation**

A workstation that starts and operates alone without being connected to another computer.

**standard Ethernet network**

An IEEE standard 802.3 compliant Ethernet network connected with standard Ethernet cable. Compare **ThinWire Ethernet network**.

**storage medium**

A device, such as a diskette or tape, capable of recording information.

**store**

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

**stylus**

A penlike device that draws on the surface of a tablet and functions as a pointing device.

**system**

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

**system configuration**

The layout of the hardware in a particular computer system.

**system disk**

The disk that stores the operating system, and which starts the system and allows it to run properly.

**system image**

The image that is read into memory from disk when the system is started up (booted).

**system management tasks**

Tasks performed by an assigned person (usually the system manager) to operate and maintain the system.

**tablet**

An absolute-positioning input device composed of a flat-surfaced digitizing tablet and a puck or stylus. The tablet is a drawing surface. The puck and stylus are pointing devices that move the cursor on the monitor screen, draw graphics, and make selections from the menu.

**tape drive**

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

**T-connector**

Connector used to join ThinWire Ethernet cable sections.

**TCP/IP**

Transmission Control Protocol/Internet Protocol. Networking protocols standard with ULTRIX software.

**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 Ethernet network**

A DIGITAL trademark used to describe its 10base2 (IEEE standard 802.3 compliant) Ethernet products used for local distribution of data.

**ThinWire connector**

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

**timesharing**

A system in which two or more programs get, in turn, equal time or use of a computer or computer device.

**transceiver**

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

**turbo system**

A VAXstation 3100 Model 30 with a hard disk for paging and swapping.

**ULTRIX**

DIGITAL implementation of the UNIX operating system.

**user interface**

The interaction style between the computer and the user of that computer.

**VAXcluster**

A group of two or more computers connected by an Ethernet cable. In a VAXcluster, one computer serves the other computers: it is required to start the other computers, and manages the resources that they share.

**VMS**

DIGITAL's proprietary operating system.

**window**

An area on your monitor screen in which you can start, run, and view a separate process. Windowing is supported by both VMS and ULTRIX workstation software.

**workstation**

A single-user system that offers high-performance, high-resolution graphics, and can function in a network environment.

**write-protect**

To protect a disk, diskette, or other storage medium from being overwritten or deleted.

**write-protect notch**

The small notch on the side of a diskette that you can cover with an adhesive-backed foil label or tab to prevent loss of data by accidental overwriting.

**write-protect switch**

The switch that you slide down on a TK50 tape cartridge to prevent loss of data by accidental overwriting.

**window system**

A windowing system architecture that allows the execution and display of applications to be independent. Specific components of the architecture control the display of applications. Different components determine how applications run. Since its introduction by MIT, the X Window System has become an industry standard.



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1. The first part of the document discusses the importance of maintaining accurate records of all transactions. This is essential for ensuring the integrity of the financial statements and for providing a clear audit trail.

2. The second part of the document outlines the various methods used to collect and analyze data. These methods include direct observation, interviews, and the use of specialized software tools. Each method has its own strengths and limitations, and it is important to choose the most appropriate one for the specific situation.

3. The third part of the document describes the process of data analysis. This involves identifying patterns, trends, and anomalies in the data. It is important to use statistical techniques and other analytical tools to help with this process. The results of the analysis should be clearly presented and interpreted in a way that is easy to understand.

4. The final part of the document discusses the importance of communication. It is essential to share the results of the analysis with the relevant stakeholders in a clear and concise manner. This can be done through reports, presentations, or other communication channels. It is also important to provide ongoing support and training to ensure that the information is used effectively.

5. The document also includes a section on the importance of data security. It is essential to protect the data from unauthorized access, loss, or corruption. This can be achieved through the use of strong passwords, encryption, and other security measures. It is also important to have a clear policy in place regarding data security and to ensure that all staff are aware of and follow this policy.

6. The document also includes a section on the importance of data quality. It is essential to ensure that the data is accurate, complete, and up-to-date. This can be achieved through the use of data validation techniques and regular data audits. It is also important to have a clear policy in place regarding data quality and to ensure that all staff are aware of and follow this policy.

7. The document also includes a section on the importance of data privacy. It is essential to ensure that the data is used only for the purposes for which it was collected and that it is not shared with unauthorized parties. This can be achieved through the use of access controls and other privacy measures. It is also important to have a clear policy in place regarding data privacy and to ensure that all staff are aware of and follow this policy.

8. The document also includes a section on the importance of data retention. It is essential to ensure that the data is retained for the appropriate period of time and that it is properly disposed of when it is no longer needed. This can be achieved through the use of data retention policies and other retention measures. It is also important to have a clear policy in place regarding data retention and to ensure that all staff are aware of and follow this policy.

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HOW TO GET THE MOST OUT OF YOUR WORK

1. Plan your work. Make a list of things to do and prioritize them. This helps you focus on what's most important and avoid distractions.

2. Take breaks. It's important to rest your mind and body. Short breaks throughout the day can help you stay focused and productive.

3. Stay organized. Keep your workspace clean and clutter-free. Use folders and labels to keep your files and documents in order.

4. Communicate effectively. Listen to others and express your ideas clearly. Good communication is key to successful teamwork.

5. Stay motivated. Set goals for yourself and track your progress. Celebrate your successes and don't be afraid to ask for help when you need it.

6. Manage your time. Avoid procrastination and stay on schedule. Use time management techniques to make the most of your workday.

7. Stay healthy. Exercise regularly, eat a balanced diet, and get enough sleep. A healthy body is essential for a healthy mind.

8. Be a team player. Support your colleagues and work together to achieve common goals. Collaboration is often the key to success.

9. Stay positive. A positive attitude can help you overcome challenges and stay motivated. Focus on the good and look for opportunities.



# Reader's Comments

VAXstation 3100  
Model 30 Owner's Manual  
EK-265AA-OM-001

Your comments and suggestions will help us improve the quality of our future documentation. Please note that this form is for comments on documentation only.

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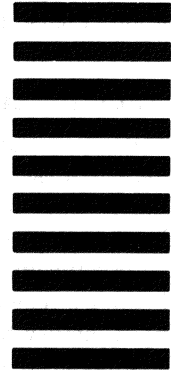
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