

# MicroVAX 2000

## Hardware Installation Guide

Prepared by Educational Services  
of Digital Equipment Corporation

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January, 1987

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DECwriter	Professional	VMS
DIBOL	Q-bus	VT
EDCS	Rainbow	
FMS	RSTS	

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

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# PREFACE

**Note:** Read this guide first to install and test the MicroVAX 2000 hardware.

This guide describes how to prepare your site; connect the terminals and options (printers, additional DECconnect office cable, modems, and expansion boxes) to the MicroVAX 2000 system unit; connect the power cords; power up and test the MicroVAX 2000; format the fixed disk; and set the default boot device.

Keep this guide for future reference.

## Recommended Reading Path

Read the MicroVAX 2000 hardware and operating system software documentation in the following order:

1. Hardware Installation Information
  - a. *MicroVAX 2000 Hardware Installation Guide* (This guide.)
  - b. *VAXstation 2000, MicroVAX 2000, and VAXmate Network Guide* (For network installation.)
2. Operating System Installation Information
  - a. *MicroVAX 2000 Owner's Manual*, Chapter 1 (Operating the MicroVAX 2000)
  - b. *MicroVMS VAXstation 2000/MicroVAX 2000 Installation Guide*  
or  
*ULTRIX-32 Basic Installation Guide for the MicroVAX 2000*
3. Reference Information
  - a. *MicroVAX 2000 Owner's Manual*
  - b. *MicroVMS VAXstation 2000/MicroVAX 2000 Operations Guide*  
or  
*ULTRIX-32 System Management Guide* and *ULTRIX-32 Programmer's Manual*

## Procedures

When you go through this guide, you will perform the following procedures. Follow and complete each step sequentially.

1. Prepare your site.
2. Check your shipment.
3. Set up the system unit.
4. Install the converter.
5. Install the console terminal.
6. Install any additional terminals.
7. Install any options.
8. Connect the power cords.
9. Power up and test the MicroVAX 2000.
10. Format any fixed disks.
11. Set the default boot device.

After all the steps above have been completed, install the networking hardware (if you ordered it) and install the operating system software.

## Special Notices

The following notices appear throughout this guide:

- **NOTES** — Contain general or supplemental information about a topic.
- **CAUTIONS** — Contain information to prevent damage to equipment.
- **WARNINGS** — Contain information to prevent personal injury.

**NOTES, CAUTIONS, and WARNINGS** are bolded.

Procedures

When you are ready to begin, you will be given the following instructions. The first instruction will be to "begin."

1. When you are ready to begin, you will be given the following instructions. The first instruction will be to "begin."
2. When you are ready to begin, you will be given the following instructions. The first instruction will be to "begin."
3. When you are ready to begin, you will be given the following instructions. The first instruction will be to "begin."
4. When you are ready to begin, you will be given the following instructions. The first instruction will be to "begin."
5. When you are ready to begin, you will be given the following instructions. The first instruction will be to "begin."
6. When you are ready to begin, you will be given the following instructions. The first instruction will be to "begin."
7. When you are ready to begin, you will be given the following instructions. The first instruction will be to "begin."
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11. When you are ready to begin, you will be given the following instructions. The first instruction will be to "begin."

After all the items have been completed, you will be given the following instructions. The first instruction will be to "begin."

Appendix

- 1. Appendix A - Description of the test
- 2. Appendix B - Description of the test
- 3. Appendix C - Description of the test
- 4. Appendix D - Description of the test
- 5. Appendix E - Description of the test
- 6. Appendix F - Description of the test
- 7. Appendix G - Description of the test
- 8. Appendix H - Description of the test
- 9. Appendix I - Description of the test
- 10. Appendix J - Description of the test
- 11. Appendix K - Description of the test
- 12. Appendix L - Description of the test
- 13. Appendix M - Description of the test
- 14. Appendix N - Description of the test
- 15. Appendix O - Description of the test
- 16. Appendix P - Description of the test
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- 18. Appendix R - Description of the test
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- 20. Appendix T - Description of the test
- 21. Appendix U - Description of the test
- 22. Appendix V - Description of the test
- 23. Appendix W - Description of the test
- 24. Appendix X - Description of the test
- 25. Appendix Y - Description of the test
- 26. Appendix Z - Description of the test

## PREPARING YOUR SITE

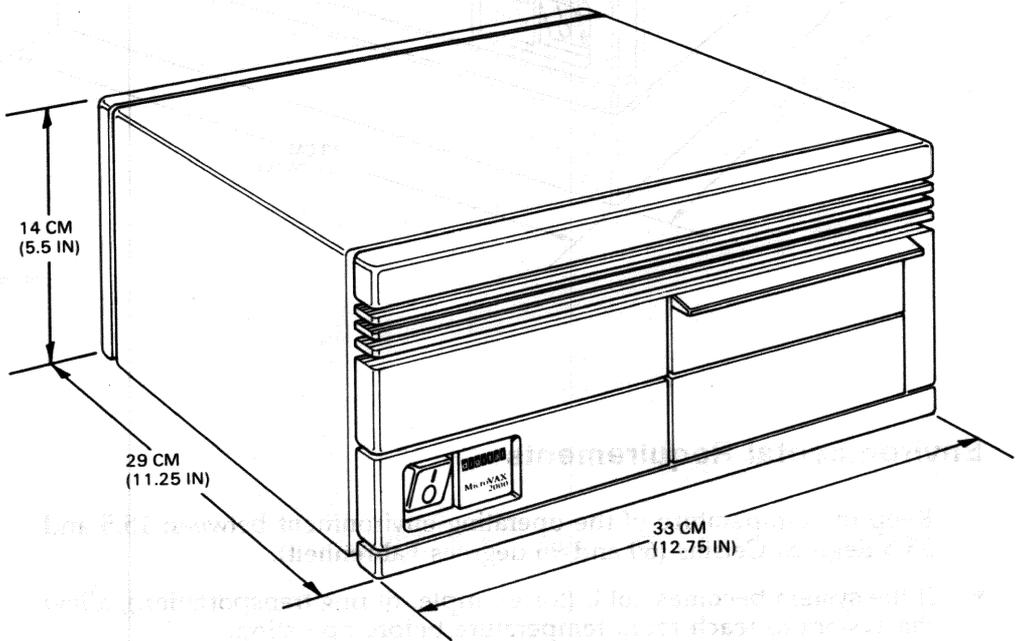
Before installing the MicroVAX 2000, review the following site-preparation requirements.

For detailed MicroVAX 2000 system specifications, refer to Appendix A of the *MicroVAX 2000 Owner's Manual*.

### Space Planning

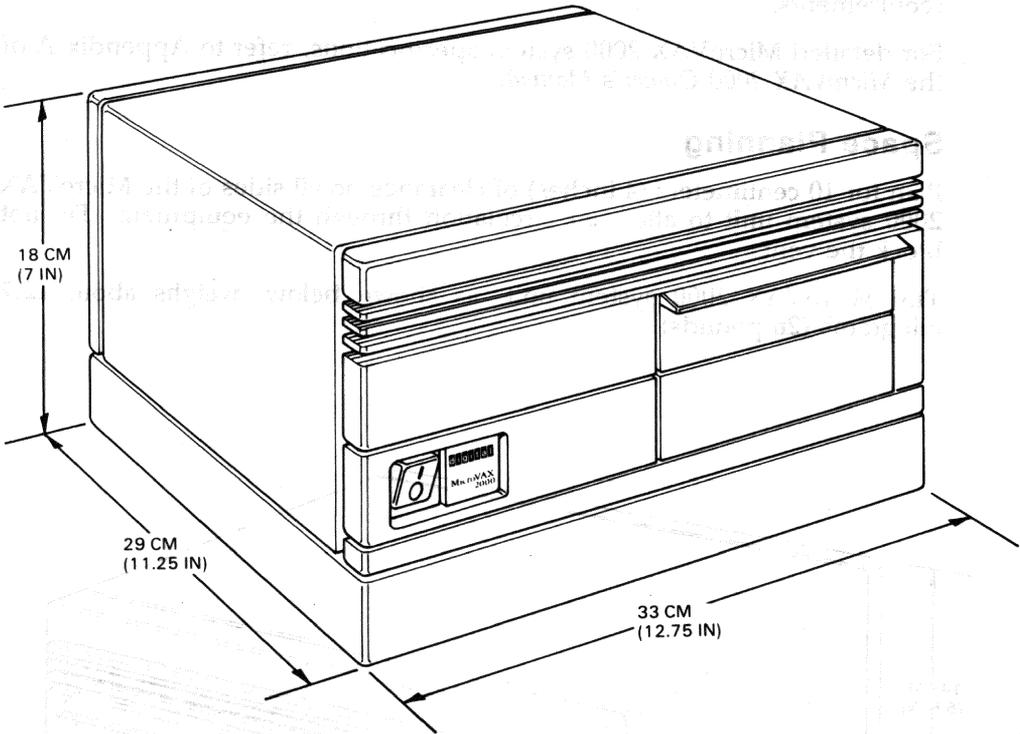
Plan for 10 centimeters (4 inches) of clearance on all sides of the MicroVAX 2000 system unit to allow air circulation through the equipment. Do not block the vents.

The MicroVAX 2000 system unit, as shown below, weighs about 12.7 kilograms (28 pounds).



MR1086-1116

The MicroVAX 2000 system unit with the expansion adapter, as shown below, weighs about 14 kilograms (30 pounds).



MR1086-1115

## Environmental Requirements

- Keep the temperature of the operating environment between 15.5 and 35.5 degrees Celsius (60 and 96 degrees Fahrenheit).
- If the system becomes cold, (for example, during transportation), allow the system to reach room temperature before operation.
- Keep the air well circulated to prevent heat from accumulating.
- Keep the MicroVAX 2000 away from heaters, photocopiers, and direct sunlight.

- Keep the relative humidity between 40 and 80 percent for proper operation of the MicroVAX 2000.
- To minimize static electricity buildup, locate the system away from busy areas, such as office corridors, and keep the environment at the recommended humidity levels. (Static electricity can cause a system to fail, data to be lost, and other problems to occur.)
- Keep the area clean. Do not place food or drinks on or near the MicroVAX 2000.
- Keep the area free of dust. (Dust particles can interfere with system cooling and damage hardware, diskettes, and tape cartridges.)
- Store supplies, such as diskettes and tape cartridges, at the same temperature and humidity levels as recommended for the system environment. (Refer to the *MicroVAX 2000 Owner's Manual* for more information on diskettes and tape cartridges.)

## Electrical Requirements

A dedicated 15-ampere branch circuit is recommended for each system. The circuit must meet national and local standards, provide a good system ground, be stable, and be free from electrical noise. If power disturbances cannot be prevented, add power-conditioning equipment. Some printers require branch circuits. Consult DIGITAL service personnel to assess your needs.

The ac power source should allow for system expansion. Do not connect other equipment (such as air conditioners or office copiers) to the circuit dedicated to the system unit or the terminal.

# CHECKING YOUR SHIPMENT

The key element of your MicroVAX 2000 hardware shipment is the system unit carton. The illustration below shows the contents of the system unit carton.

## MicroVAX 2000 CARTON CONTENTS



MicroVAX 2000  
SYSTEM UNIT



MicroVAX 2000  
POWER CORD



CONVERTER



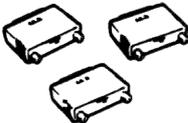
FLAT BLADE  
SCREWDRIVER



BOTTOM  
DRESS COVER



3 DEconnect  
OFFICE CABLES  
(PART NO. BC16E)



3 25-PIN ADAPTERS  
(PART NO. H8571A)

## HARDWARE INFORMATION KIT



MicroVAX 2000 HARDWARE  
INSTALLATION GUIDE (THIS GUIDE)



MicroVAX 2000 OWNER'S MANUAL



25-PIN TERMINAL CABLE  
(PART NO. BC22D)



25-PIN MODEM CABLE  
(PART NO. BCC04)

Unpack your shipment and check to see that you have received all the items pictured. In addition, check your shipment against the packing slip.

**NOTE:** The cable-restraining bar on the back of the MicroVAX 2000 system unit can be used as a handle when unpacking and carrying the unit.

**CAUTION:** Do not set the MicroVAX 2000 system unit on its front, as this may damage the drive door.

You may have received additional items. Terminals, printers, expansion boxes, and ThinWire Ethernet hardware are packaged separately. Other options, such as the expansion adapter, memory module, and network module come preinstalled in the system unit. Operating system software is shipped in a separate carton along with the operating system software documentation.

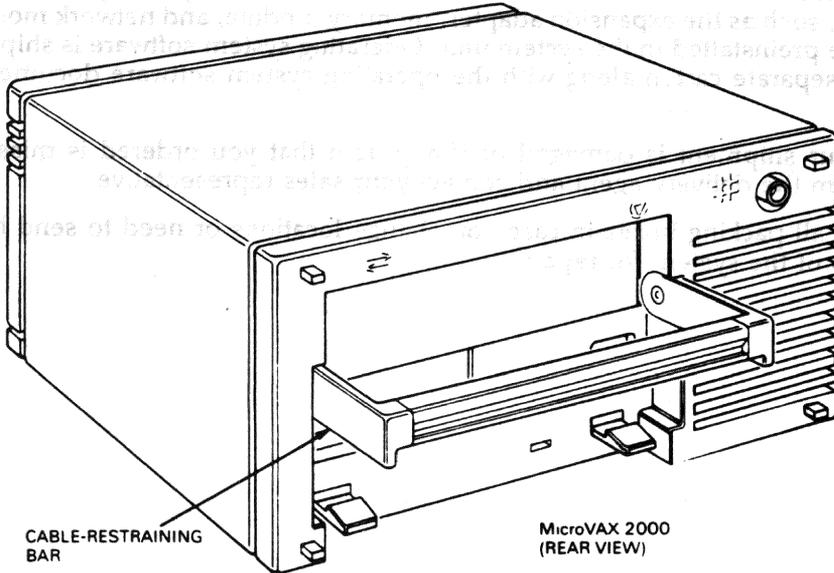
If your shipment is damaged or if any item that you ordered is missing, inform the delivery agent and contact your sales representative.

Save all packing boxes in case you change locations or need to send back parts of the system for repair.

## SETTING UP THE SYSTEM UNIT

**NOTE:** The cable-restraining bar on the back of the MicroVAX 2000 can be used as a handle when unpacking and carrying the system unit.

**CAUTION:** Do not set the MicroVAX 2000 system unit on its front, as this may damage the drive door.



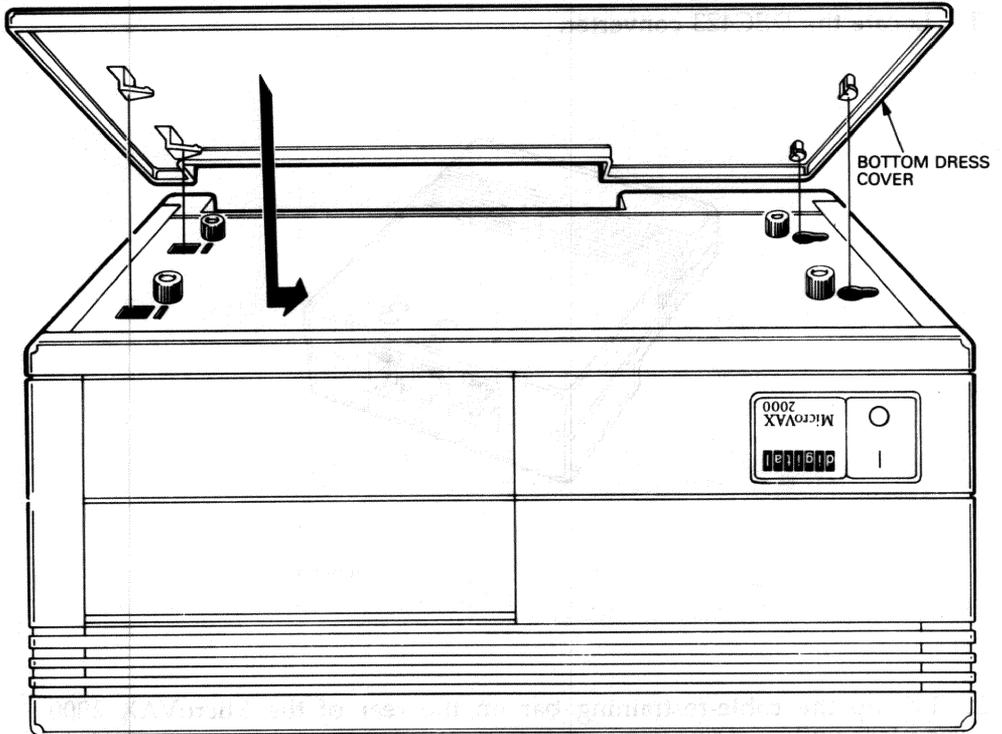
MRO986-0986

You may set up the MicroVAX 2000 on its bottom rubber feet or on its side (either side) unless the system contains an expansion adapter. If an expansion adapter is installed on the bottom of the system unit, the system unit must sit on its rubber feet.

If you choose to set up the MicroVAX 2000 system unit on its side, you must install the bottom dress cover. To install the bottom dress cover, do the following:

1. Place the MicroVAX 2000 system unit upside down on a level surface.
2. Locate the bottom dress cover.

3. Line up the molded inserts on the inside of the bottom dress cover over the holes on the bottom of the MicroVAX 2000 system unit. Then slide the bottom dress cover until it locks into place.



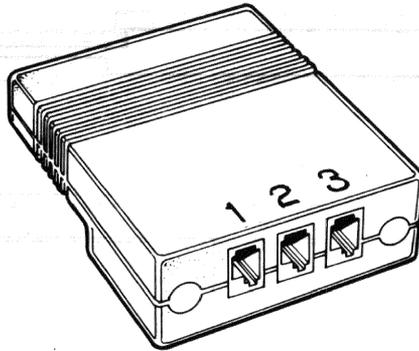
MR1086-1149

4. Place the MicroVAX 2000 system unit in one of the recommended positions on a level surface. (All the illustrations in this guide show the MicroVAX 2000 system unit positioned bottom side down.)

## INSTALLING THE CONVERTER

**CAUTION:** When installing the DEC423 converter to the rear of the MicroVAX 2000 system unit, do not place the system unit on its front, as the drive door may be damaged.

1. Locate the DEC423 converter.

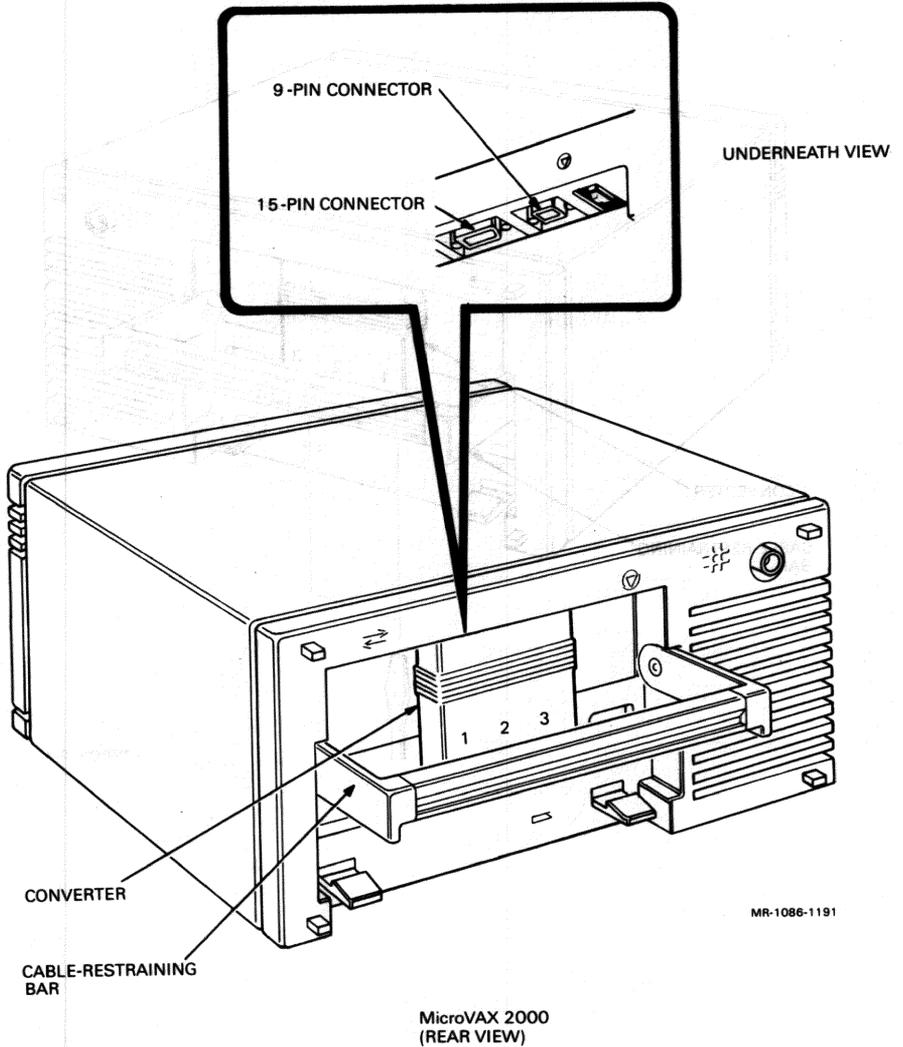


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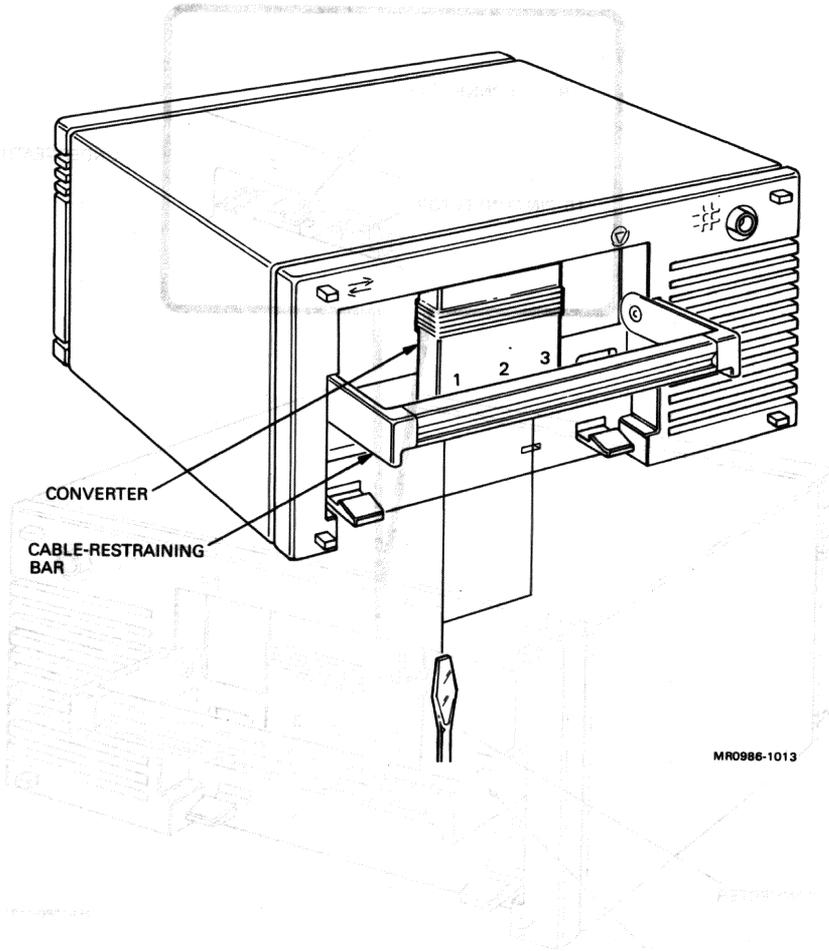
2. Lift up the cable-restraining bar on the rear of the MicroVAX 2000 system unit.

Place the MicroVAX 2000 system unit in one of the recommended positions on a level surface. (All the illustrations in this guide show the MicroVAX 2000 system unit positioned bottom side down.)

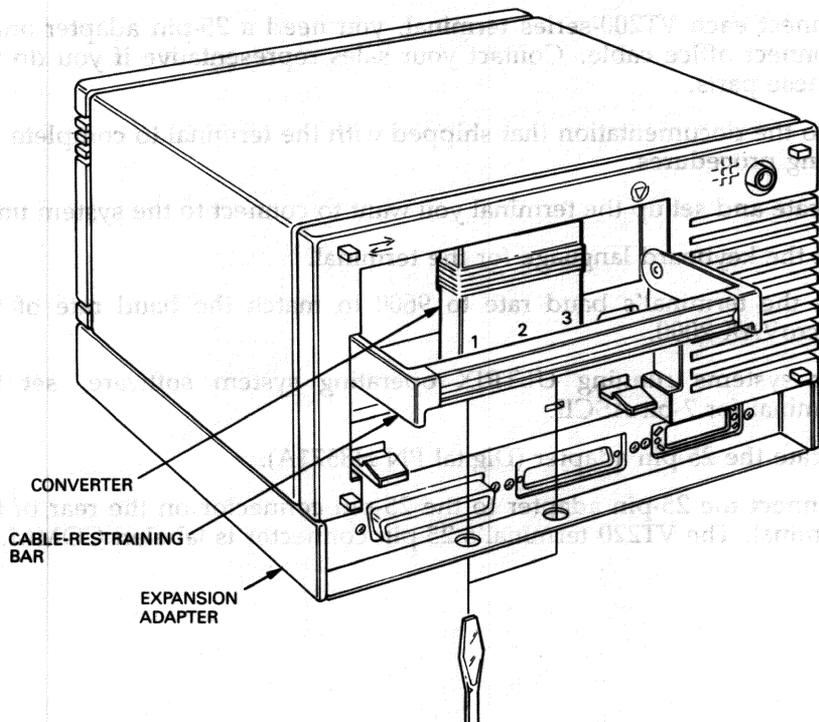
3. Fit the DEC423 converter over the 15-pin and 9-pin connectors and press it into place.



4. Use the flat-blade screwdriver you received with your shipment to turn the two converter screws clockwise.



If an expansion adapter is installed on the system unit, insert the flat-blade screwdriver through the holes in the bottom of the expansion adapter to fasten the screws on the DEC423 converter.



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## **INSTALLING THE CONSOLE TERMINAL**

This section and the following section describe how to connect VT200-series terminals to the MicroVAX 2000 system unit. If you want to connect different terminals, the installation procedure may vary from the steps listed below.

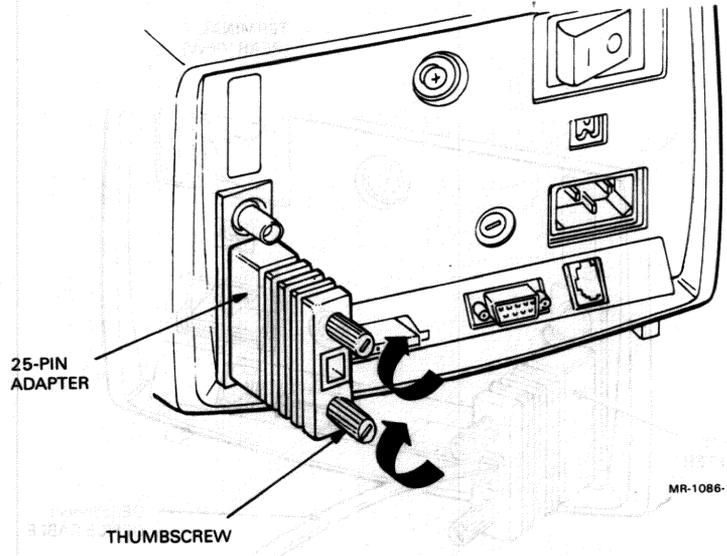
To connect each VT200-series terminal, you need a 25-pin adapter and a DECconnect office cable. Contact your sales representative if you do not have these parts.

Refer to the documentation that shipped with the terminal to complete the following procedures.

1. Locate and set up the terminal you want to connect to the system unit.
2. Set the keyboard language for the terminal.
3. Set the terminal's baud rate to 9600 to match the baud rate of the MicroVAX 2000.
4. For systems running ULTRIX operating system software, set the terminal for 7-bit ASCII.
5. Locate the 25-pin adapter (Digital PN H8571A).
6. Connect the 25-pin adapter to the 25-pin connector on the rear of the terminal. The VT220 terminal's 25-pin connector is labeled COMM.

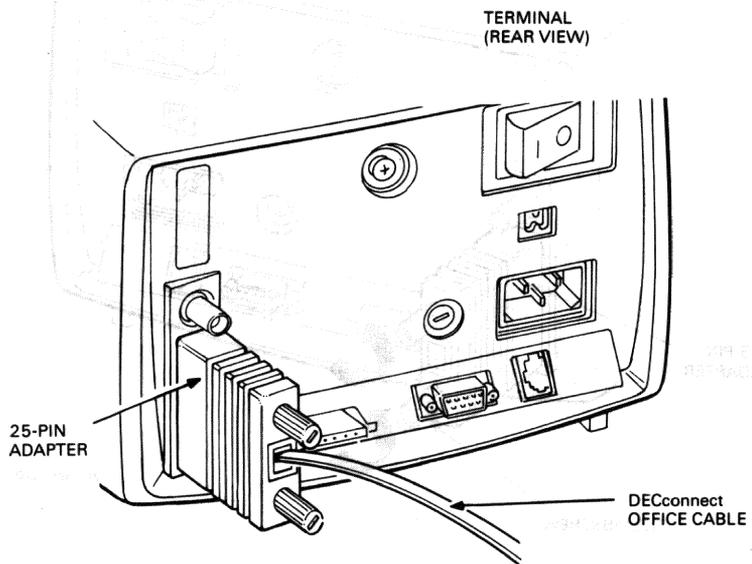
7. Tighten the thumbscrews on the 25-pin adapter with your fingers.

TERMINAL  
(REAR VIEW)



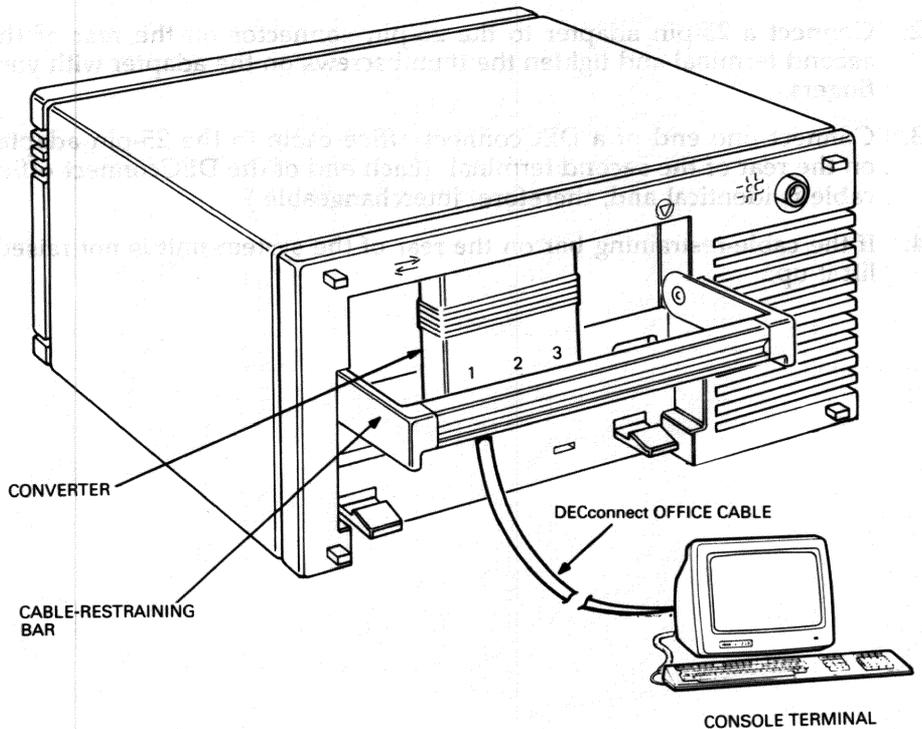
MR-1086-1220

8. Locate the DECconnect office cable (Digital PN BC16E).
9. Connect one end of the DECconnect office cable to the 25-pin adapter on the terminal. (Each end of the DECconnect office cable is identical and, therefore, interchangeable.)



MR-1086-1190

10. Raise the cable-restraining bar on the MicroVAX 2000 system unit if it is not already raised.
11. Insert the free end of the DECconnect office cable to connector 1 on the DEC423 converter.



The terminal that you have just connected is called the console terminal. The console terminal allows the user to control certain system functions and to access diagnostic programs that reside in the system. The console terminal must be connected to connector 1 on the DEC423 converter.

**NOTE:** For a MicroVAX 2000 to function correctly, a console terminal must be connected.

## INSTALLING THE ADDITIONAL TERMINALS

It is possible to install a total of four terminals on the MicroVAX 2000 system unit. Follow the instructions below for installing the additional three terminals.

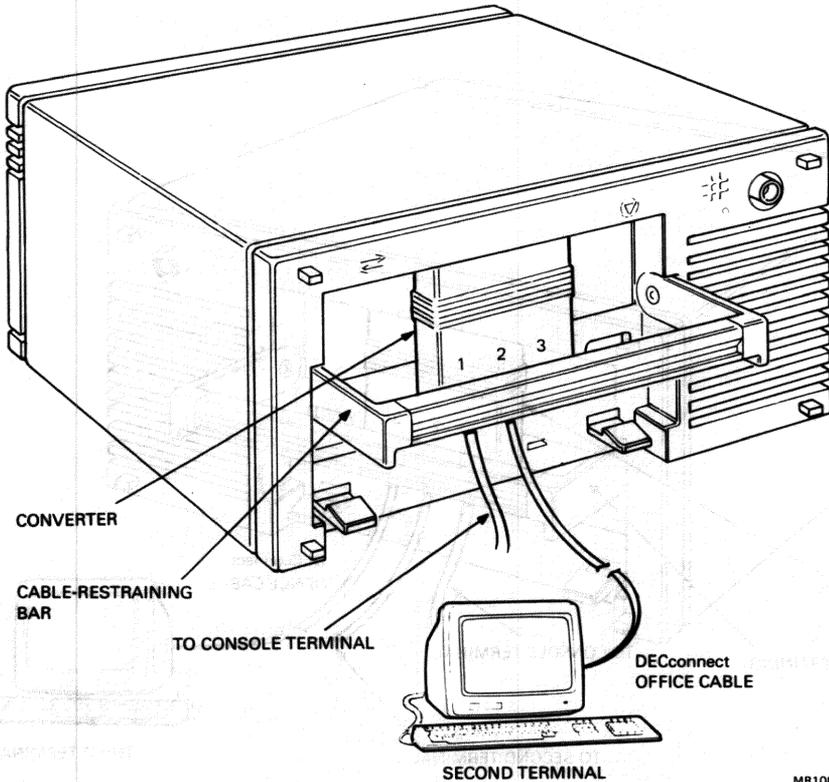
1. Set up the terminals using the first four steps in Install the Console Terminal.
2. Connect a 25-pin adapter to the 25-pin connector on the rear of the second terminal and tighten the thumbscrews on the adapter with your fingers.
3. Connect one end of a DECconnect office cable to the 25-pin adapter on the rear of the second terminal. (Each end of the DECconnect office cable is identical and, therefore, interchangeable.)
4. If the cable-restraining bar on the rear of the system unit is not raised, lift it up.



The terminal that you have just connected is called the console terminal. The console terminal allows the user to control certain system functions and to access diagnostic programs that reside in the system. The console terminal must be connected to connector 1 on the DEC423 connector.

NOTE: For a MicroVAX 2000 to function correctly, a console terminal must be connected.

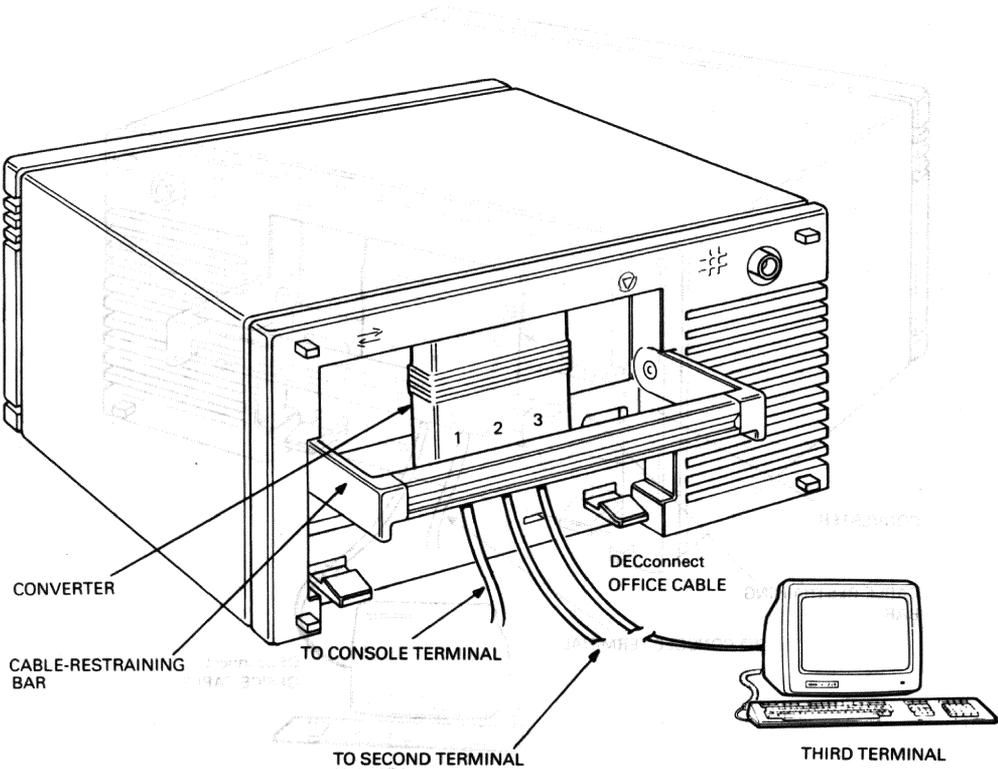
5. Connect the free end of the second terminal's DECconnect office cable to connector 2 on the DEC423 converter.



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**If you do not plan to install any additional terminals, proceed to Installing the Options. If you do not have any options to install, proceed to Connecting the Power Cords.**

Before you install a third terminal, first consider whether you will also be installing a printer. If you do not plan to install a printer, set up the third terminal using the same procedure as the second terminal. Connect the third terminal to connector 3 of the DEC423 converter.

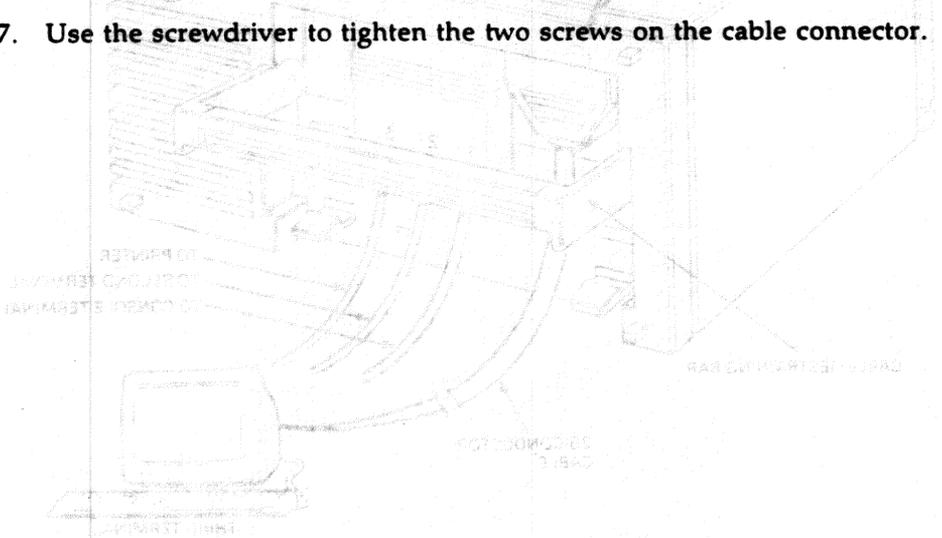


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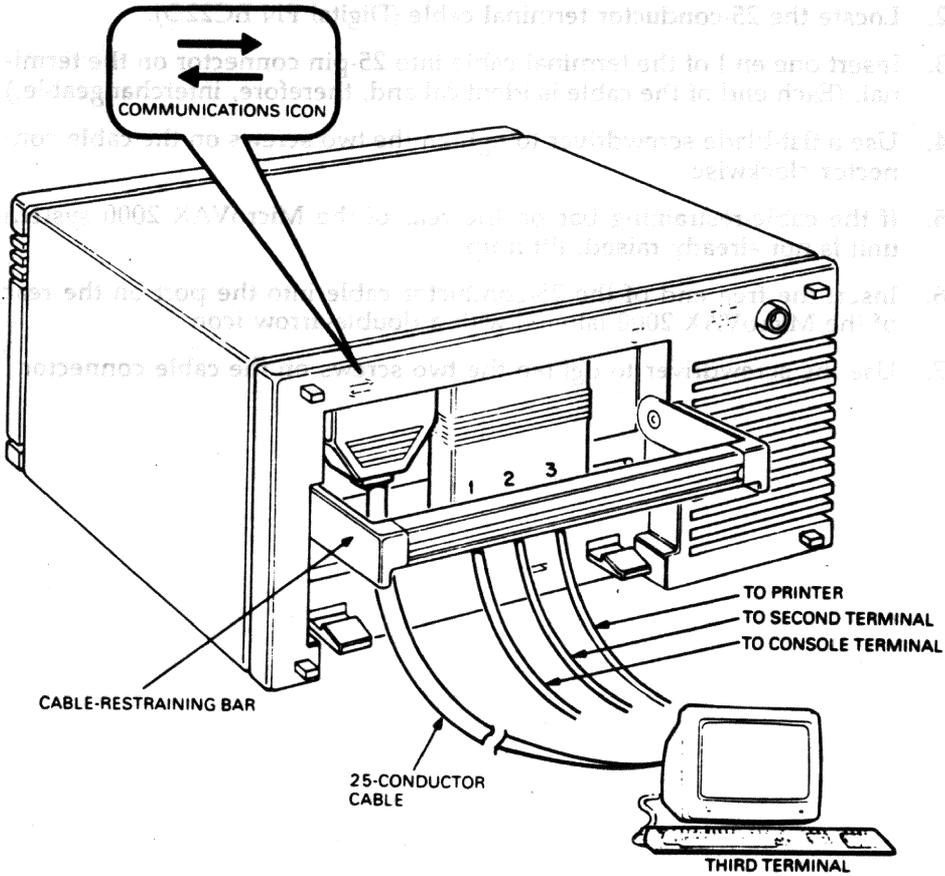
If you plan to install a printer, complete the steps in Connecting the Third or Fourth Terminal to the Communications Port. However, if you plan to install a modem in addition to a printer, you cannot install a third or fourth terminal.

## Connecting the Third or Fourth Terminal to the Communications Port

1. Set up the terminal as usual, but do not install a 25-pin adapter.
2. Locate the 25-conductor terminal cable (Digital PN BC22D).
3. Insert one end of the terminal cable into 25-pin connector on the terminal. (Each end of the cable is identical and, therefore, interchangeable.)
4. Use a flat-blade screwdriver to tighten the two screws on the cable connector clockwise.
5. If the cable-restraining bar on the rear of the MicroVAX 2000 system unit is not already raised, lift it up.
6. Insert the free end of the 25-conductor cable into the port on the rear of the MicroVAX 2000 labeled with a double-arrow icon.
7. Use the screwdriver to tighten the two screws on the cable connector.

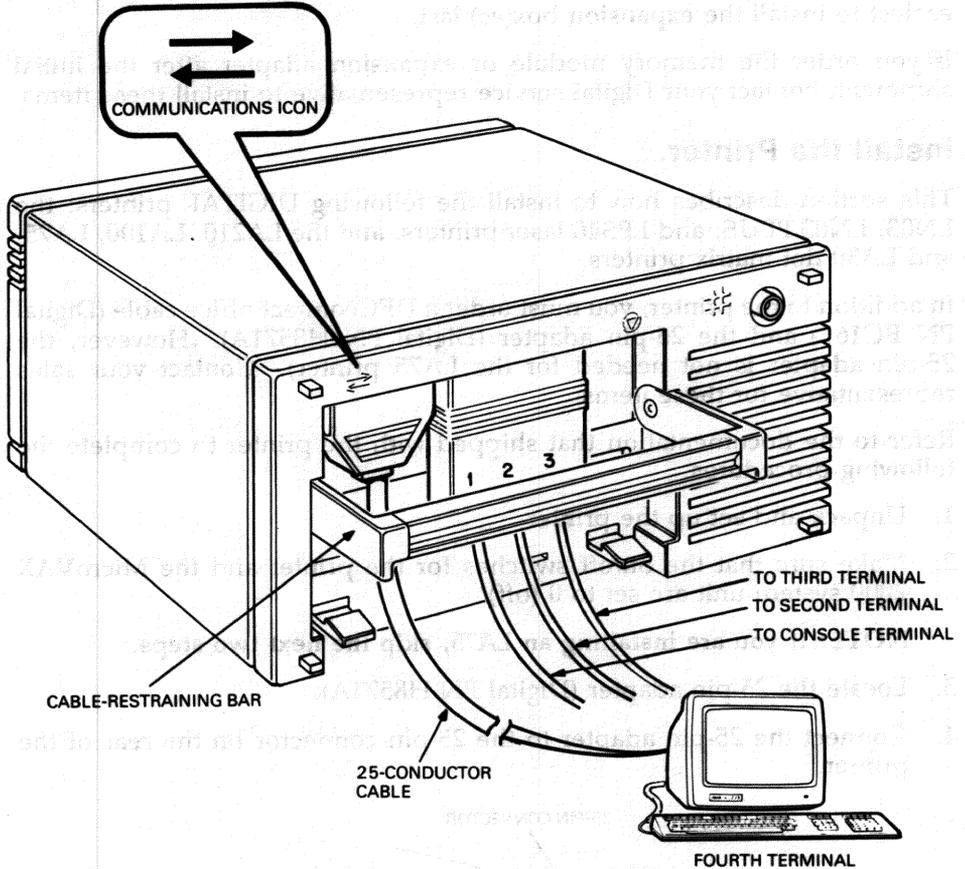


The following illustration shows the third terminal connected to the communications port.



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The following illustration shows the fourth terminal connected to the communications port.



MR0986-1005

Proceed to Installing the Options. If you do not have any options to install, proceed to Connecting the Power Cords.

## INSTALLING THE OPTIONS

To install a printer, additional DECconnect office cable length, a modem, or expansion box cables, follow the instructions in this section under the option you are installing. The options can be installed in any order; however, it is easiest to install the expansion box(es) last.

If you order the memory module or expansion adapter after the initial shipment, contact your Digital service representative to install these items.

### Install the Printer.

This section describes how to install the following DIGITAL printers: the LN03, LN03 PLUS, and LPS40 laser printers, and the LA210, LA100, LA75, and LA50 dot-matrix printers.

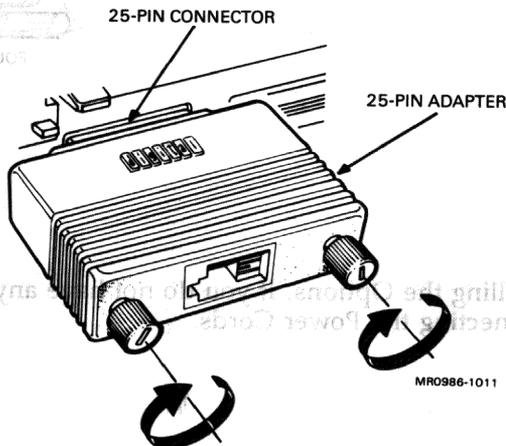
In addition to the printer, you must order a DECconnect office cable (Digital PN BC16E) and the 25-pin adapter (Digital PN H8571A). (However, the 25-pin adapter is not needed for the LA75 printer). Contact your sales representative for these items.

Refer to the documentation that shipped with the printer to complete the following procedures.

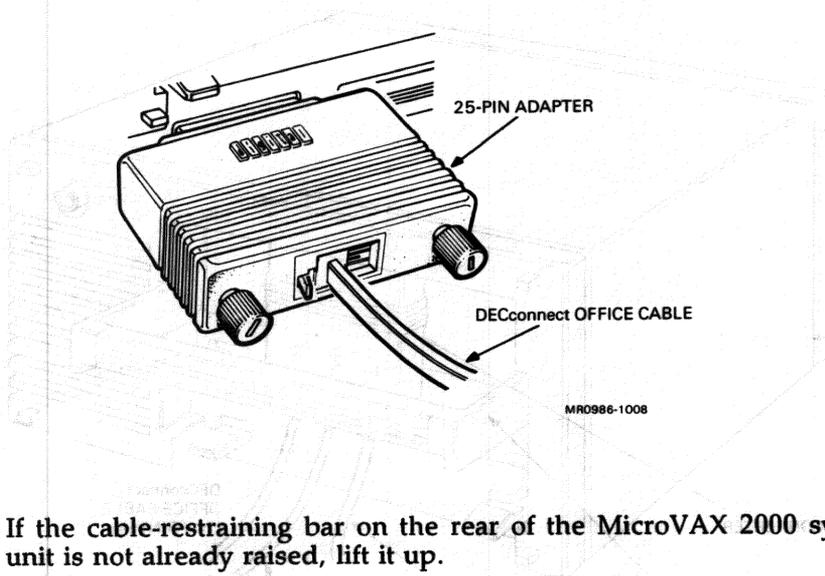
1. Unpack and set up the printer.
2. Make sure that the on/off switches for the printer and the MicroVAX 2000 system unit are set to 0 (off).

**NOTE: If you are installing an LA75, skip the next two steps.**

3. Locate the 25-pin adapter (Digital PN H8571A).
4. Connect the 25-pin adapter to the 25-pin connector on the rear of the printer.

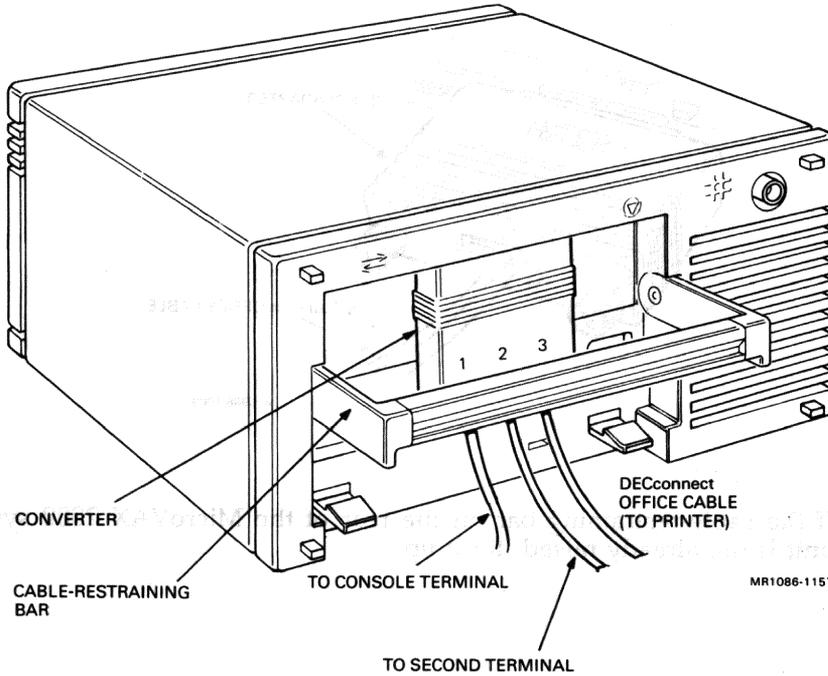


5. Locate the DECconnect office cable (Digital PN BC16E).
6. Plug one end of the DECconnect office cable into the 25-pin adapter on the rear of the printer. If you are installing an LA75, plug the cable directly into the connector on the back of the printer. (Each end of the DECconnect office cable is identical and, therefore interchangeable.)



7. If the cable-restraining bar on the rear of the MicroVAX 2000 system unit is not already raised, lift it up.

8. Connect the free end of the DECconnect office cable into either the second or third connector on the DEC423 converter. (If neither connector is free, you must remove the terminal that is connected to the third connector to install the printer.)



## Notes on Printer Operation

- Make sure that the printer's baud rate is set to 9600.
- For systems running ULTRIX operating system software, set the printer for 7-bit ASCII. (Refer to the documentation that shipped with the printer to set 7-bit ASCII.)
- The LA210 printer requires that the XOFF and Wrap be enabled. (Refer to the LA210 documentation for switch-toggling information.)

After you have properly completed all the instructions in this guide and successfully installed the operating system software, complete the following procedures for proper operation of the printer:

- Refer to the operating system software documentation to define the printer port as the connector where you attached the printer cable.
- For systems running ULTRIX operating system software, run LPR set up. Refer to the *ULTRIX-32 System Management Guide*.

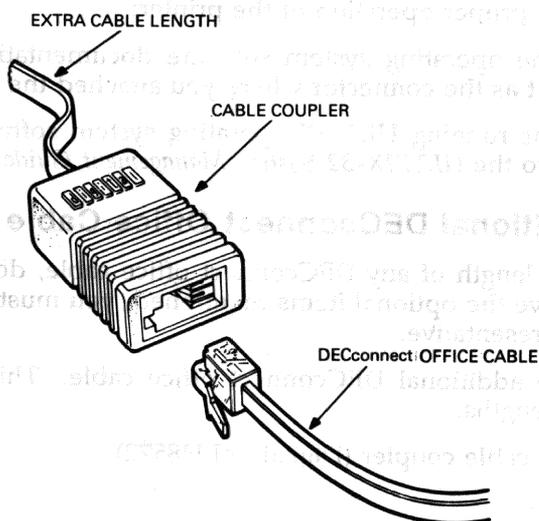
## Install Additional DECconnect Office Cable Length.

To extend the length of any DECconnect office cable, do the following. If you do not have the optional items mentioned, you must order them from your sales representative.

1. Locate the additional DECconnect office cable. This cable comes in different lengths.
2. Locate the cable coupler (Digital PN H8572).

3. Insert one end of the additional DECconnect office cable into either side of the cable coupler.
4. Insert one end of the terminal's or printer's DECconnect office cable into the free end of the cable coupler. (You can install as many cable couplers as you have cable segments.)

**NOTE: If you want to shorten DECconnect office cable, use a crimping tool. This tool can be ordered from your Digital sales representative. Follow the instructions that come with the crimping tool.**



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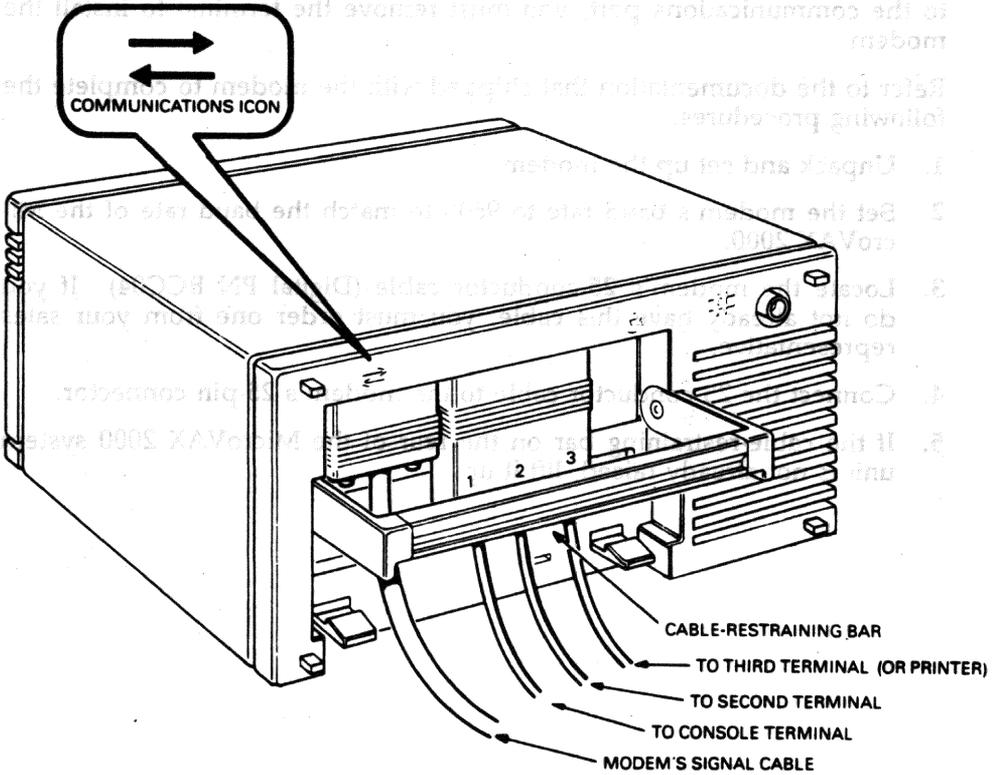
## Install the Modem.

A modem allows communication between the MicroVAX 2000 and another system over telephone lines. This section describes how to install the DF112, DF124, and DF224 modems. If a terminal is already connected to the communications port, you must remove the terminal to install the modem.

Refer to the documentation that shipped with the modem to complete the following procedures.

1. Unpack and set up the modem.
2. Set the modem's baud rate to 9600 to match the baud rate of the MicroVAX 2000.
3. Locate the modem's 25-conductor cable (Digital PN BCC04). If you do not already have this cable, you must order one from your sales representative.
4. Connect the 25-conductor cable to the modem's 25-pin connector.
5. If the cable-restraining bar on the rear of the MicroVAX 2000 system unit is not already raised, lift it up.

6. Connect the free end of the modem's 25-conductor cable to the communications port on the MicroVAX 2000 system unit (identified with the double-arrow icon).



MRO986-1001

7. Tighten the thumbscrews on the modem's 25-conductor cable connector by turning them clockwise with your fingers.
8. Replace the cable-restraining bar by pressing it in with your fingers until it locks into place.

## **Install the Expansion Boxes.**

**NOTE:** The cable-restraining bar on the rear of each expansion box can be used as a handle and should be used to carry the expansion box. However, do not place the expansion box on its front, as the drive door on the front of the box may be damaged.

**CAUTION:** Only devices specifically designed for the MicroVAX 2000 or VAXstation 2000, such as RD53-F expansion boxes, may be attached to connector B of the expansion adapter. Likewise, devices such as RD53-F expansion boxes must not be connected to any device for which they were not designed, as circuit damage or data loss may occur.

The expansion box houses either a tape drive or a fixed disk drive and is shipped with a drive cable. The drive cable connects the expansion box to the expansion adapter on the bottom of MicroVAX 2000 system unit. The expansion adapter must already be installed before the expansion box can be connected. (If your system does not have an expansion adapter, contact your sales representative to order one. Your service representative must install the expansion adapter.)

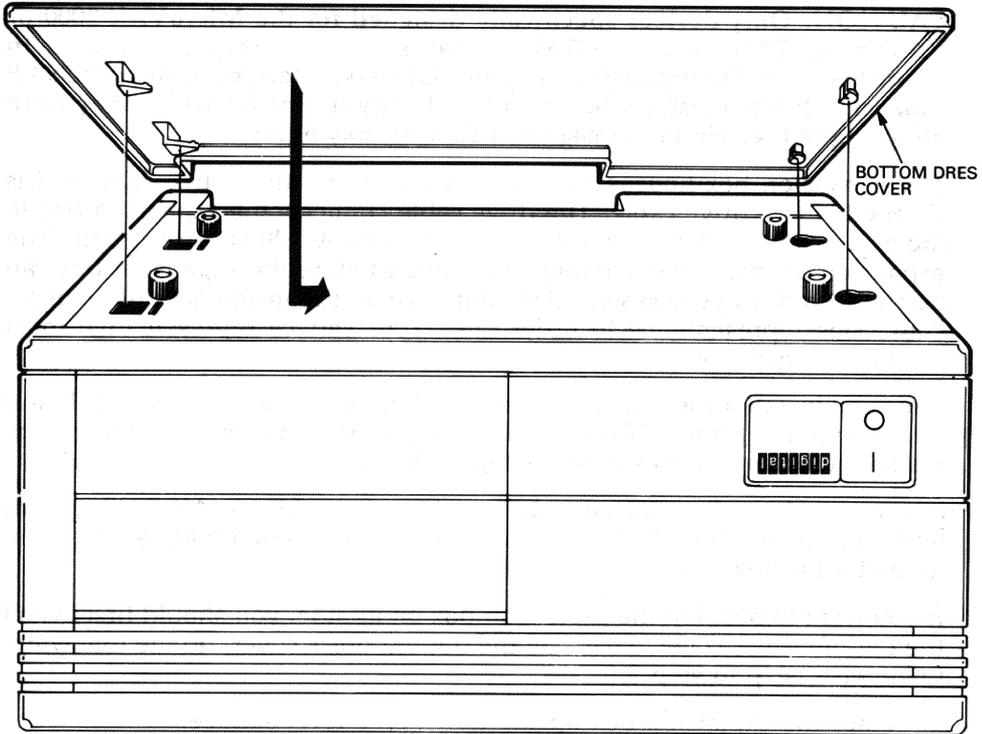
You may install a total of two expansion boxes (one with a fixed disk and one with a tape drive). If you are installing more than one expansion box, install the expansion box with the tape drive first.

You may set up the expansion box on top of the MicroVAX 2000 system unit, underneath the MicroVAX system unit, on its side (either side), or on its bottom rubber feet.

If you want to position the expansion box on its side, you should first install the bottom dress cover. To install the bottom dress cover, do the following. Otherwise, skip to step 3.

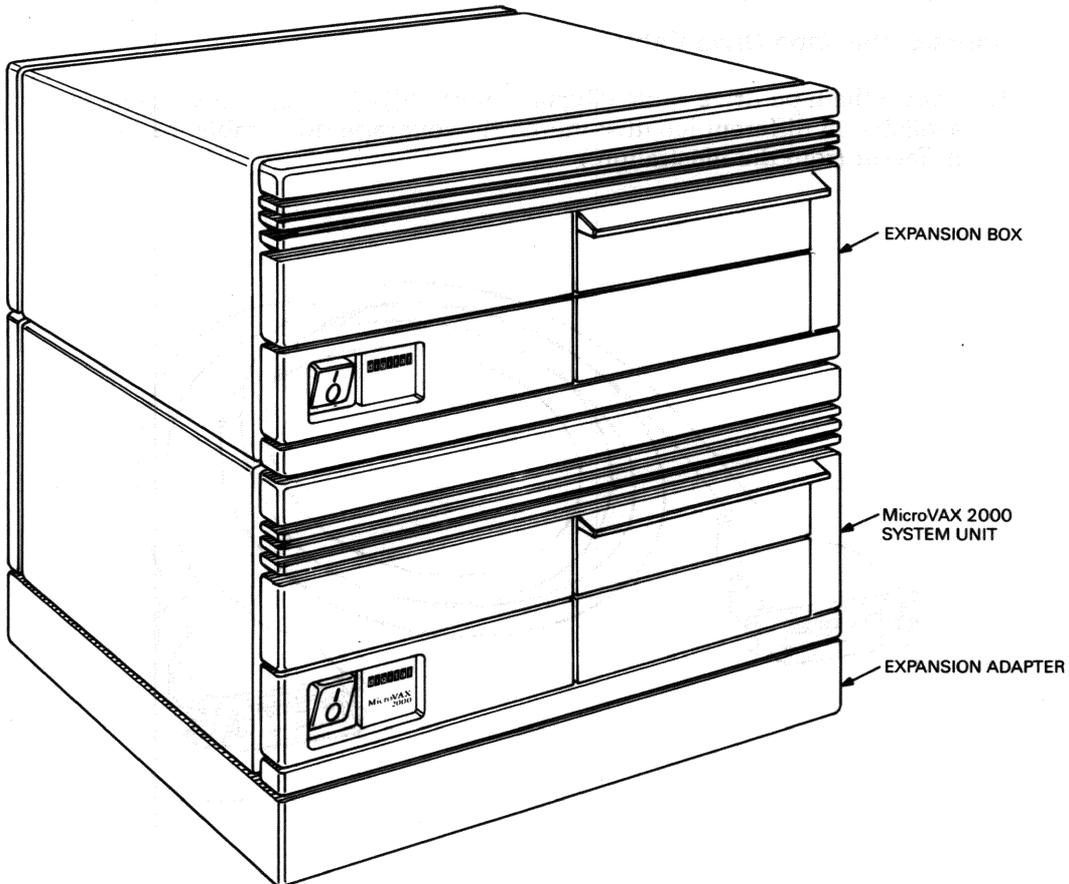
1. Place the expansion box upside down on a level surface.

2. Locate the bottom dress cover. Line up the molded inserts on the inside of the bottom dress cover over the holes on the bottom of the expansion box. Then slide the bottom dress cover until it locks into place.



MR1086-1150

3. Place the expansion box on a level surface in one of the recommended positions. (The illustrations throughout this guide show one expansion box placed on top of the MicroVAX 2000 system unit. If you wish to position the expansion box in another position, follow the text and use the illustrations for reference.)



MRO986-0999

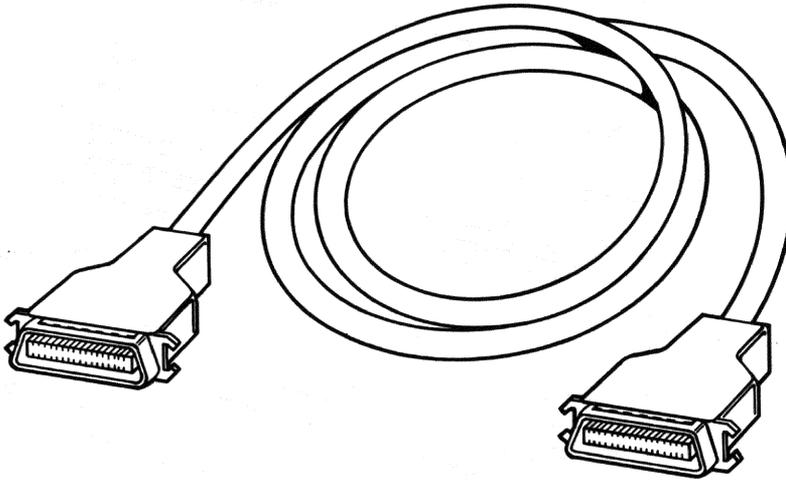
Only one expansion box can be placed on top of the system unit. A second one must be placed underneath or next to the MicroVAX 2000 system unit.

**CAUTION: Do not place two expansion boxes on top of the MicroVAX 2000 system unit, as the system unit and internal printed circuit boards will be damaged.**

If you are installing an expansion box with a tape drive, follow the instructions under **Connect the Tape Drive Cable**. If you are installing an expansion box with a disk drive, follow the instructions under **Connect the Disk Drive Cable**.

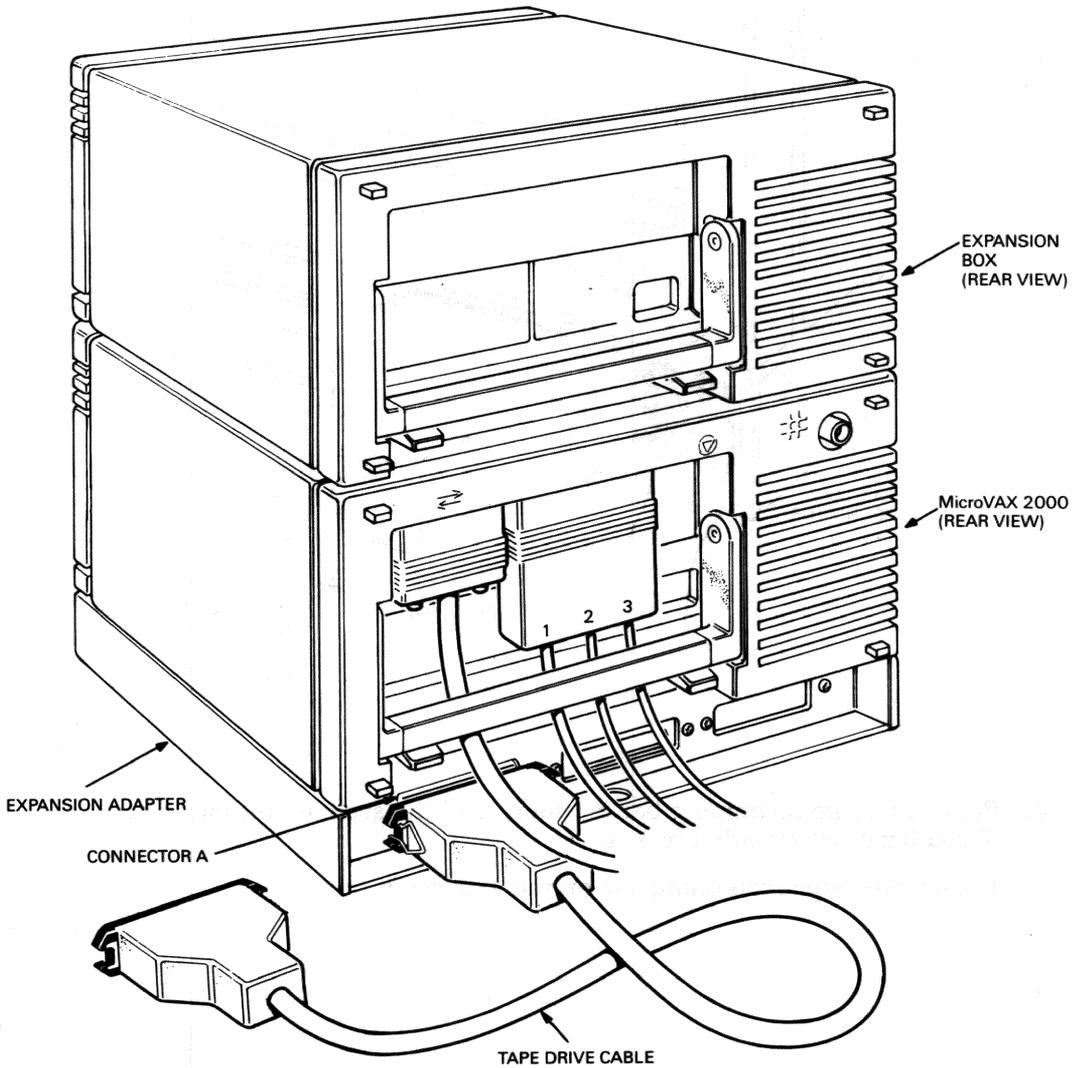
### **Connect the Tape Drive Cable.**

1. Locate the tape drive cable (Digital PN BC19J). (The tape drive cable is available in different lengths; therefore, your tape drive cable may look different from the illustration.)



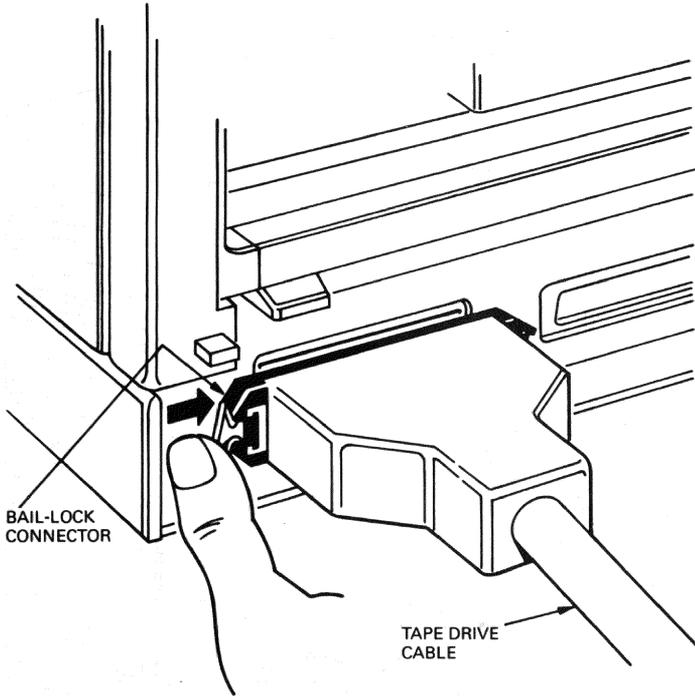
MR1086-1113

2. Insert one end of the tape drive cable into connector A on the expansion adapter. (Each end of the cable is identical and, therefore, interchangeable.)



MR0986-0997

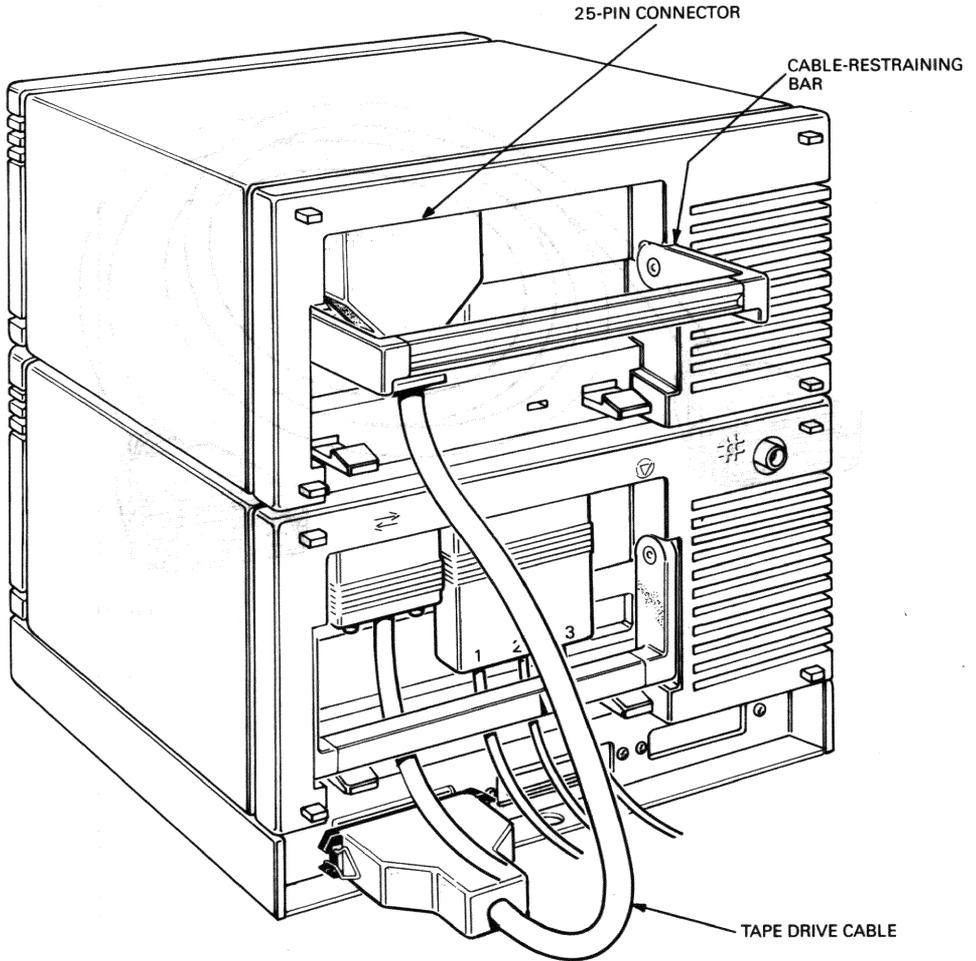
3. Fasten the bail lock connectors on the tape drive cable connector by pressing them in with your finger.



MR0986-1050

4. Press the cable-restraining bar on the rear of the system unit into place if you have not already done so.
5. Lift up the cable-restraining bar on the expansion box.

6. Insert the free end of the tape drive cable under the cable-restraining bar on expansion box and into the 25-pin connector on the expansion box.

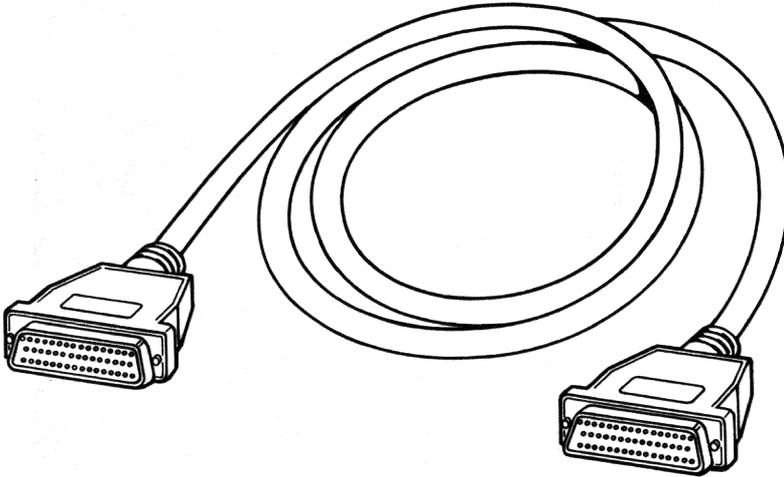


MR0986-0996

7. Fasten the bail lock connectors on the tape drive cable connector by pressing them in with your finger.

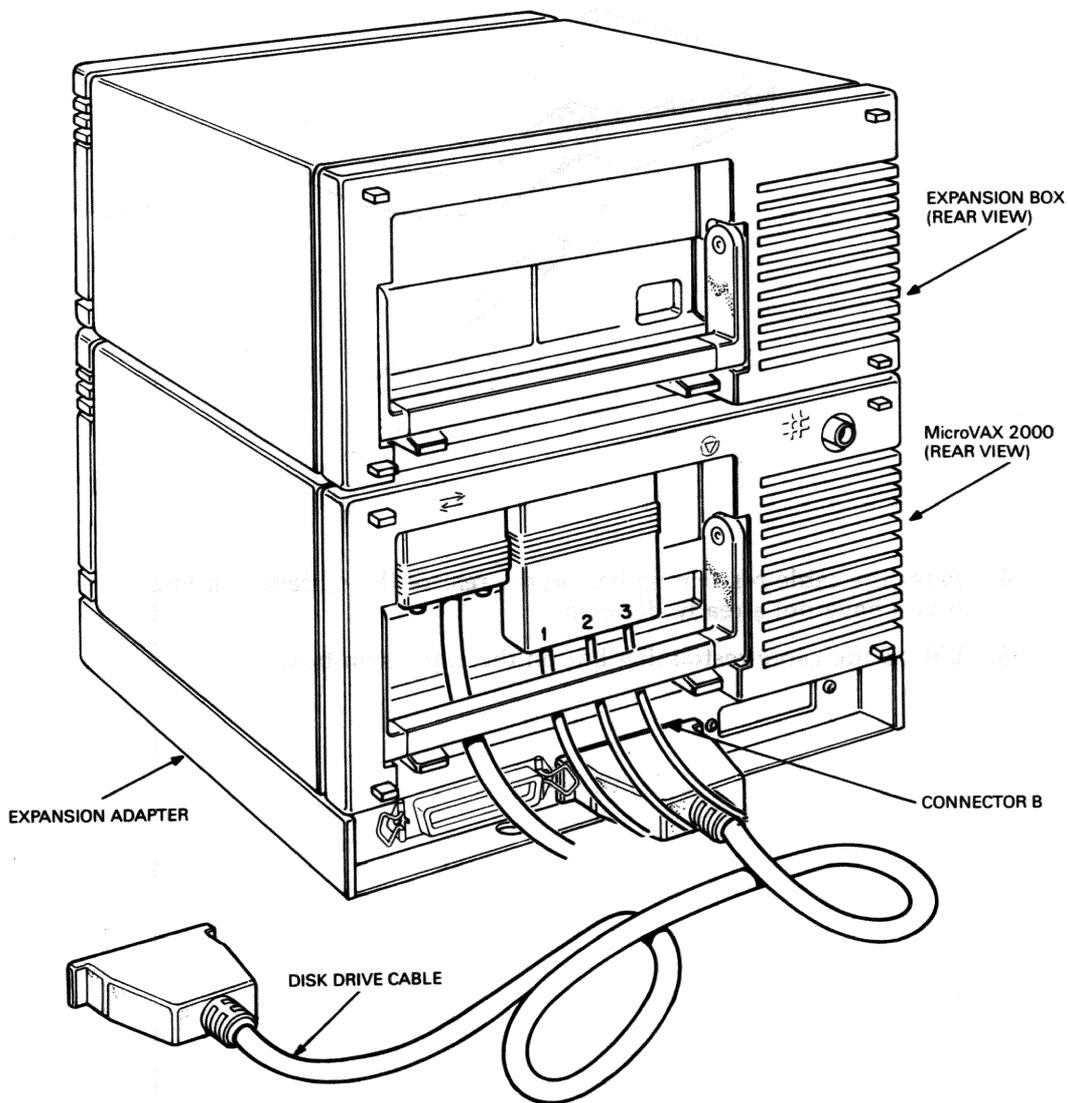
## Connect the Disk Drive Cable.

1. Locate the disk drive cable (Digital PN BC17Y). (The disk drive cable is available in different lengths; therefore, your disk drive cable may look different from the illustration.)



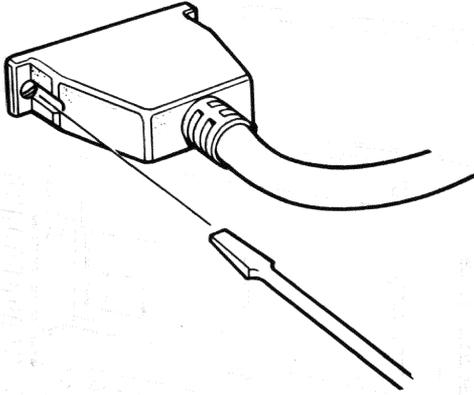
MR0986-1010

2. Insert one end of the disk drive cable into connector B on the expansion adapter. (Each end of the cable is identical and, therefore, interchangeable.)



MR0986-0995

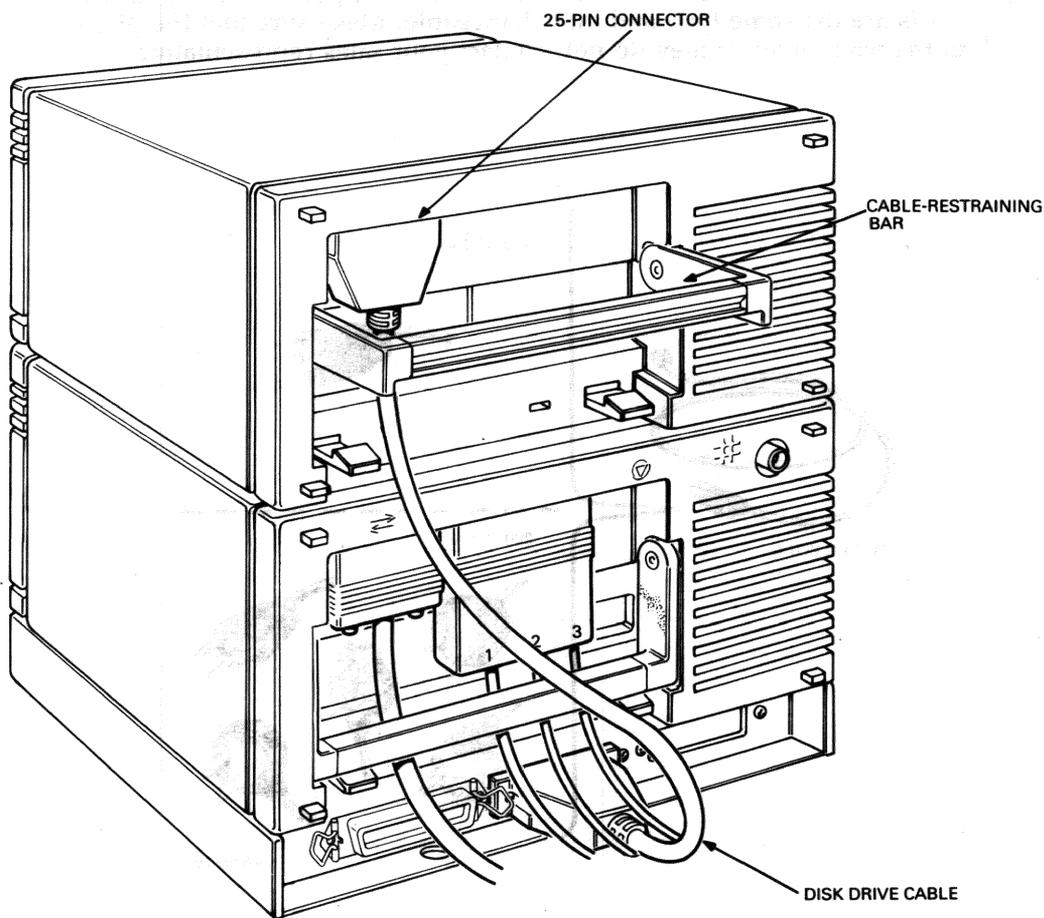
3. Use the flat-blade screwdriver you received with your shipment to turn the two cable connector screws clockwise.



MR0986-0993

4. Press the cable-restraining bar on the rear of the system unit into place if you have not already done so.
5. Lift up the cable-restraining bar on the expansion box.

6. Insert the free end of the disk drive cable under the expansion box's cable-restraining bar and into the 25-pin connector on the expansion box.

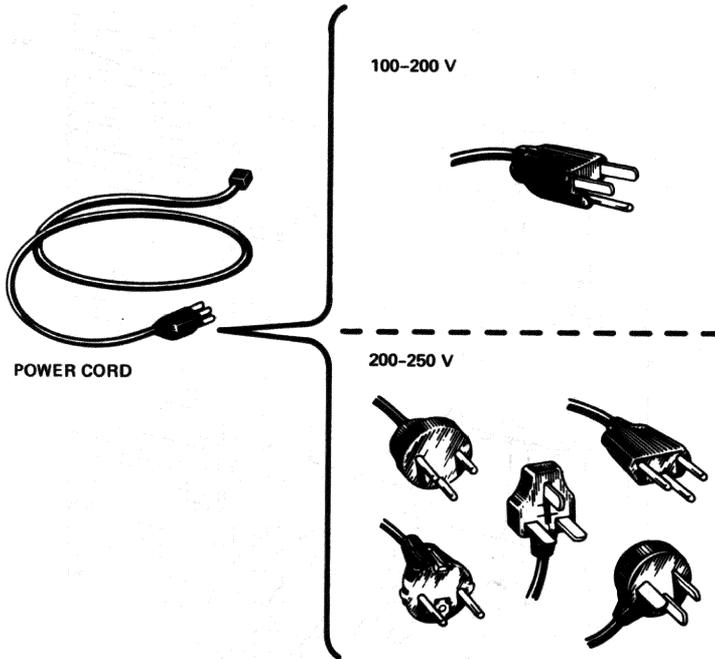


MR0986-0994

7. Use the flat-blade screwdriver to turn the two cable connector screws clockwise to fasten the cable connector.

## CONNECTING THE POWER CORDS

1. Make sure the cable-restraining bars on the rear of the MicroVAX 2000 system unit and the expansion boxes are pressed down fully.
2. Locate the terminal power cord and system unit power cord. The two cords are the same type and interchangeable. Make sure that the plugs fit the wall outlet. If they do not, contact your sales representative.

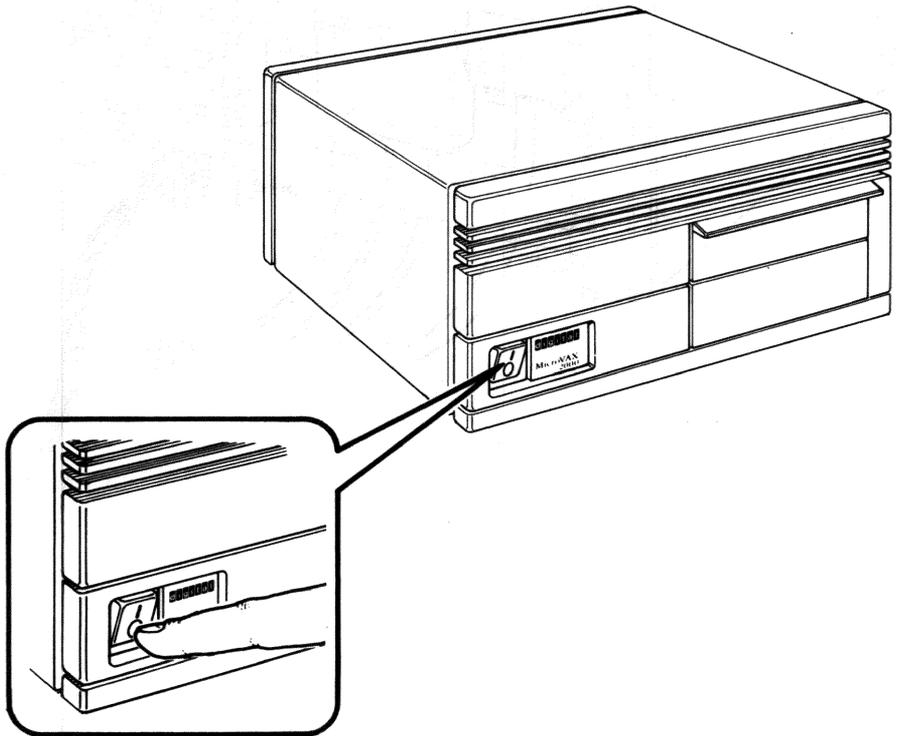


MR0986-0958

3. Make sure that the terminal's on/off switch is set to 0 (off).
4. Connect the terminal power cord to the terminal first and then to an outlet.

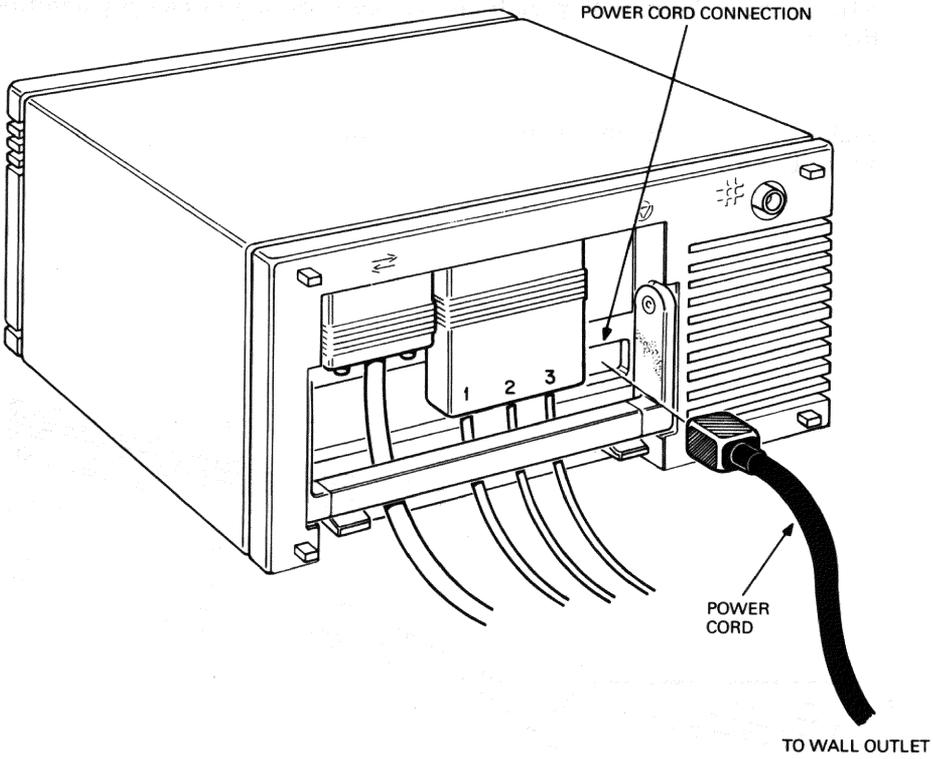
**WARNING:** Place the power and system cables in areas where no one will trip over them or step on them. Avoid straining or sharply bending the cables.

5. Make sure that the on/off switch on the MicroVAX 2000 system unit is set to 0 (off).



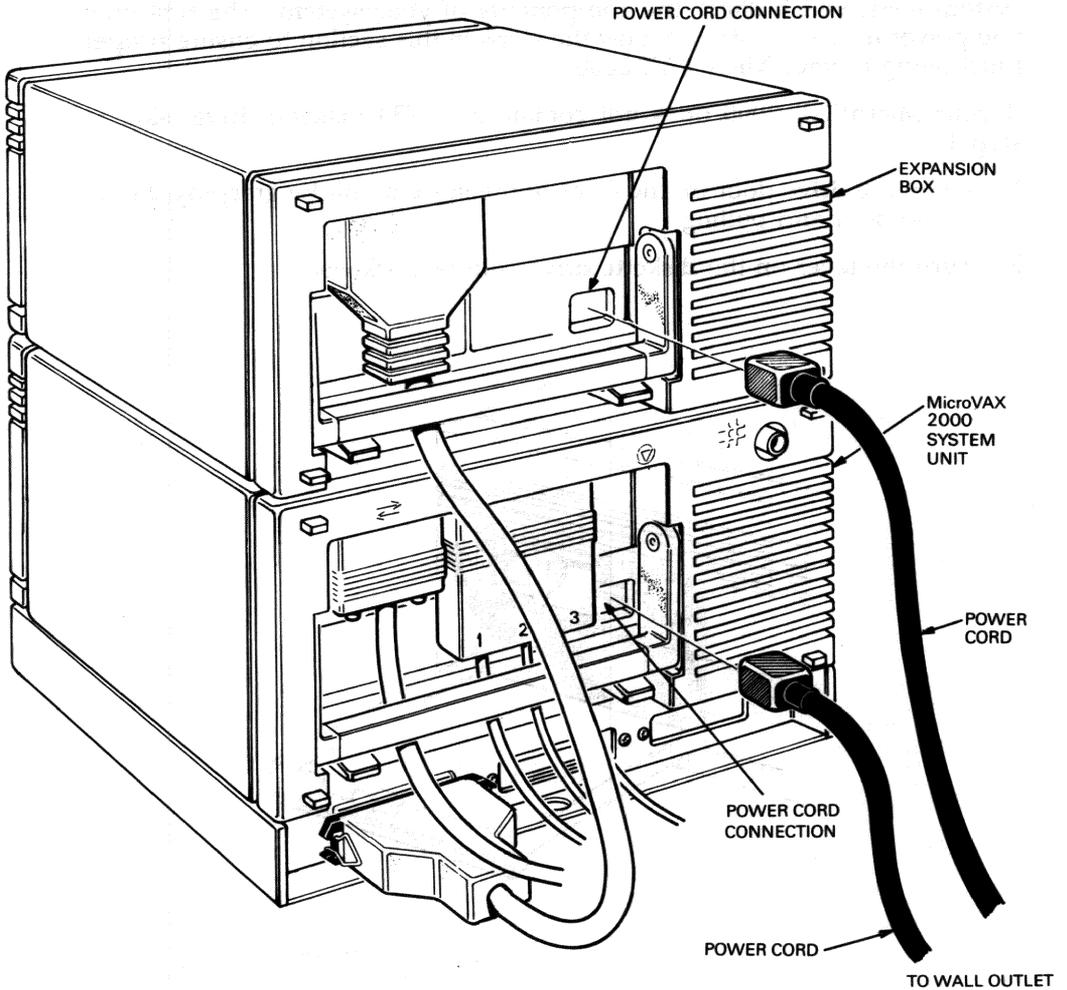
MR0986-0992

6. Connect the system unit's power cord to the system unit first and then to an outlet.



MR0986-0998

7. Make sure each expansion box on/off switch is also set to 0 (off). Then connect the expansion box power cords to each expansion box and then to an outlet.



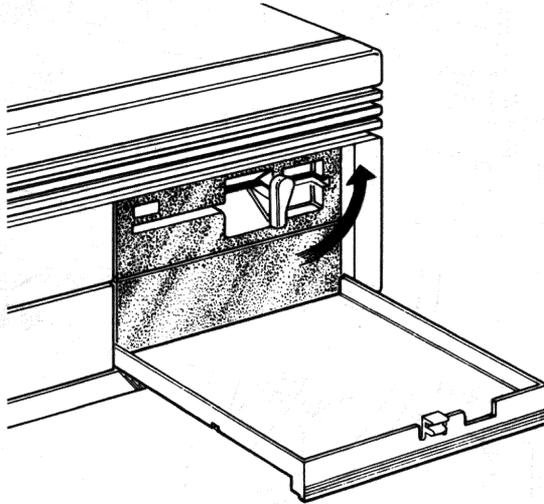
MR0986-1002

## POWERING UP AND TESTING THE MICROVAX 2000 SYSTEM

The MicroVAX 2000 diagnostic tests are stored in MicroVAX 2000 read-only memory (ROM). At power up, the MicroVAX 2000 automatically starts the system tests, which check the components of your system. The first time you power up your system, follow the steps in this section to ensure proper functioning of your MicroVAX 2000.

If your MicroVAX 2000 does not contain an RX33 diskette drive, skip to step 4.

1. Open the drive door on the front of the system unit by grasping the lip of the door and pulling.
2. Turn the lever on the diskette drive counterclockwise.

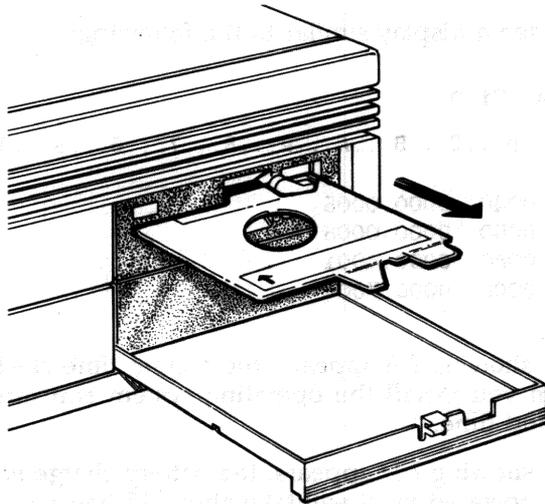


MR0986-1017

3. Remove the cardboard shipping insert and close the drive door.

**CAUTIONS:**

1. Do not try to return the lever to its original position. The lever will not move if there is nothing in the drive.
2. Operating the system without removing the shipping insert can damage the diskette drive.



MR0986-1018

4. Power up the terminal by setting the terminal's on/off switch to 1 (on).
5. Power up any optional equipment (for example, printers and expansion boxes) by setting the on/off switches to 1 (on).
6. Power up the MicroVAX 2000 system unit by setting the system unit on/off switch to 1 (on).

**CAUTION:** Do not power down the MicroVAX 2000 until power-up testing is complete. Wait until you see the console prompt ( >>> ) to power down. Powering down before testing is complete may destroy data in the system's memory.

A power-up display appears on the console terminal screen. The following three displays are examples of successful power-up displays. Find the display that matches yours. Some of these displays require user action.

Possible system problems are indicated by either one or two question marks on the console terminal screen. If single or double question marks appear and no explanation of a possible problem is given in the example, or if you do not see one of the displays listed below, review each installation step. Repeat the power-up procedure. If you still have trouble, refer to the *MicroVAX 2000 Owner's Manual*, Chapter 2.

a. You may see a display similar to the following:

```
KA410-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
? 6 00A0 0000.4001
?? 1 00C0 0000.7004
>>>
```

If the line showing ? E appears, the system time clock has not been set. When you install the operating system software, you will set the date and time.

If the line showing ? D appears, the battery charge is low. Once the system is powered up it will take about 17 hours for the battery to recharge.

If the line showing ? 6 appears, the diagnostics do not find a tape drive installed. If you do not have a tape drive installed, ignore this message. However, if you do have a tape drive installed, power down the MicroVAX 2000 system unit and review the tape drive installation steps (refer to *Install the Expansion Box*). If you still have trouble, refer to the *MicroVAX 2000 Owner's Manual*, Chapter 2.

If the line showing ?? 1 appears, the test is indicating that the ThinWire Ethernet Module is contained within the system unit, but the external ThinWire Ethernet cable has not been installed yet. This is normal and does not indicate a fault.

If the console terminal screen displays other system errors, refer to the *MicroVAX 2000 Owner's Manual*, Chapter 2. If the screen displays only the system errors listed above, proceed to Entering the Test Commands.

- b. Or, you may see a display similar to the following:

```
KA410-A V1.0
```

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

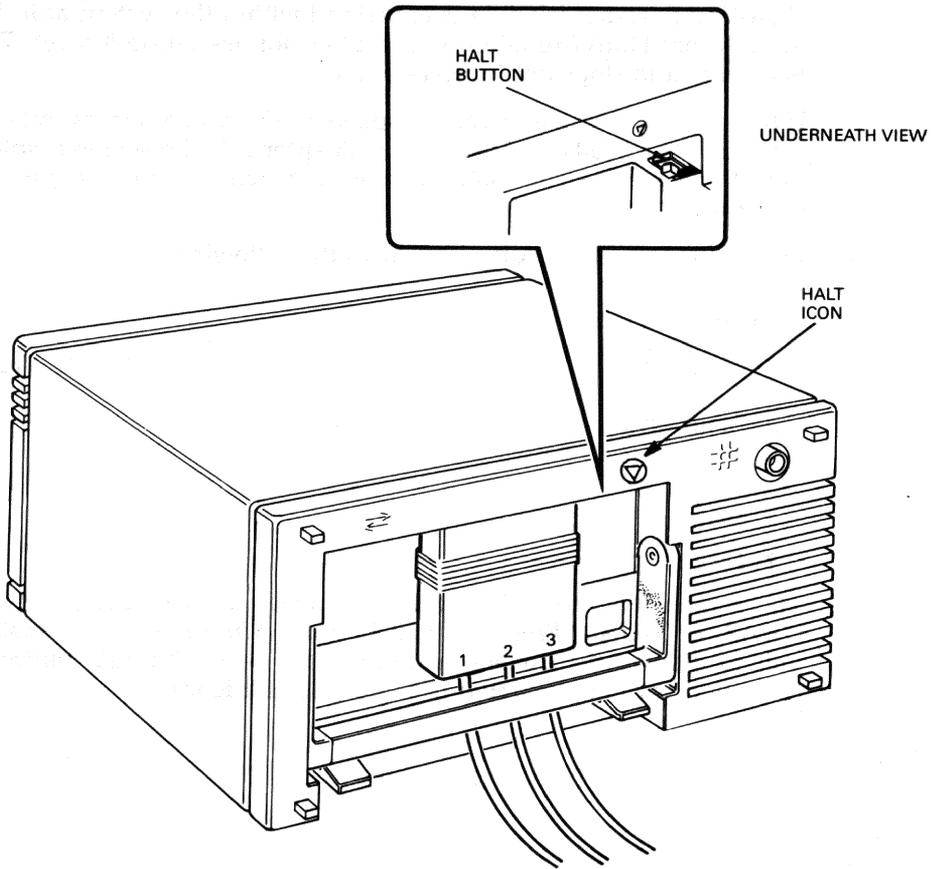
```
83 BOOT SYS
```

```
- DUA0
```

```
- ESA0
```

```
?54 RETRY
```

The screen may also display the following device names: DUA1, DUA2, or MUA0. Press the halt button on the rear of the system unit to display the console prompt ( >>> ). The halt button is identified with an encircled triangle (the halt icon).



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After you press the halt button, you will see a display similar to the following:

```
?02 EXT HLT  
PC = 00001B46  
>>>
```

This message means that the system was searching the network for the operating system software but did not find it. This is normal,

since you have not installed the networking hardware or operating system software yet. You will install these later in the installation process. Proceed to Entering the Test Commands.

- c. Or, you may see a display similar to the following:

```
KA410-A V1.0
F...E...D...C...B...A...9...8...7...6...5...4...3...2...1?...
83 BOOT SYS
- DUA0
Fatal error routine called from PC = 0000072E
Error code = 000008C2
84 FAIL
>>>
```

The screen may also display one of the following device names: DUA1, DUA2, MUA0, or ESA0. This message indicates that the system did not find the operating system software on the device mentioned (DUA0 in this example). This is normal, since you have not installed the operating system software yet. You will install software later in the installation process.

7. Type **TEST 50** and press **RETURN**. The screen displays a list of devices contained in your system. An example display is shown below; your display may be different.

>>> **TEST 50**

```
KA410-A V1.0
ID 08-00-2B-02-CF-A4

MONO          0000.0001
?CLK          0000.0005
NVR           0000.0001
DZ            0000.0001
              00000001 00000001 00000001 00000001 00000001 000012A0
MEM           0002.0001
              00200000
MM            0000.0001
FP            0000.0001
IT            0000.0001
HDC           1710.0001
              000146B8 00000000 00000320
TPC           0000.4001
              FFFFFFF03 FFFFFFF05 FFFFFFF05 FFFFFFF05 FFFFFFF05 FFFFFFF05 FFFFFFF05
SYS 0000.0001
??NI         0000.7004

>>>
```

The devices are represented by the mnemonics listed in Table 1. Use the table to determine which devices are displayed and compare the devices listed on the screen to the devices that were installed with your system. If a ThinWire Ethernet module is not installed, the NI mnemonic will not be displayed.

If differences exist, review the installation procedures in this manual to make sure that every device has been received and properly connected. Repeat **TEST 50**. If differences still exist, read the *MicroVAX 2000 Owner's Manual*, Chapter 2, or check with your service representative.

**Table 1: Definition of Mnemonics**

<b>Mnemonics</b>	<b>Device</b>
CLK	System clock
DZ	Serial line controller
FP	Floating point
HDC	Disk controller
IT	Interval timer
MEM	Memory
MM	Memory management
NI	Network interconnect module
NVR	Nonvolatile RAM
SYS	Interrupt controller and ThinWire Ethernet ID ROM
TPC	Tape controller

After your MicroVAX 2000 successfully completes the power-up tests, format the fixed disk drive and set the default boot device before installing the operating system software.

## **FORMATTING THE FIXED DISK**

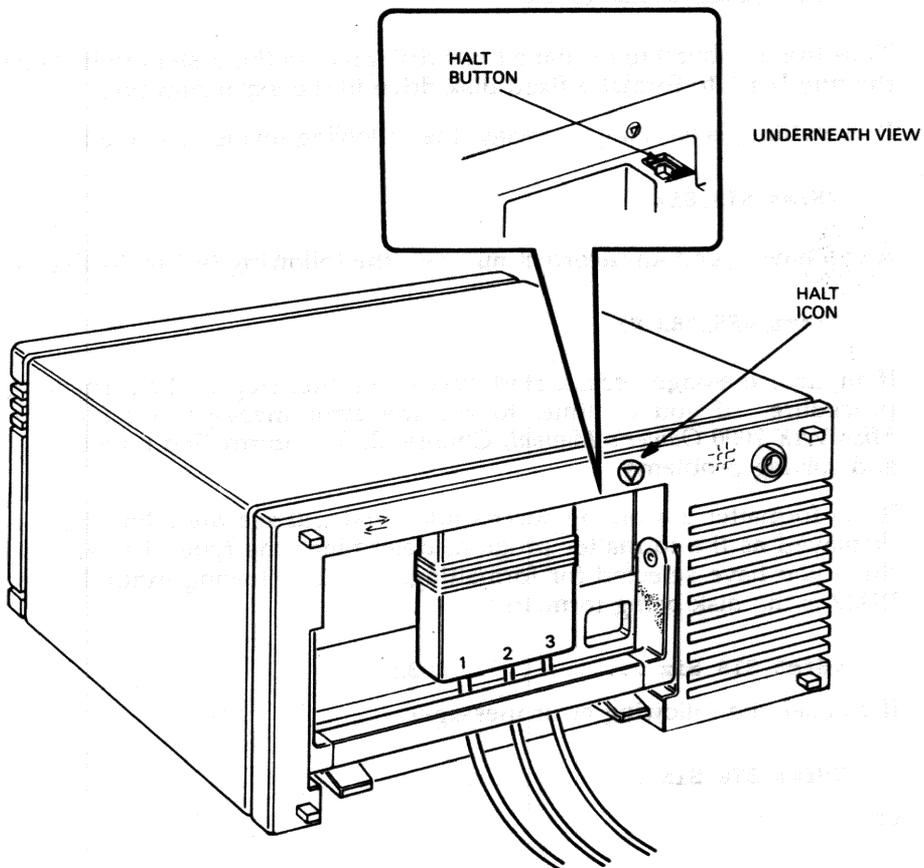
You must format each fixed disk in the system unit or in the expansion box. Formatting prepares the disk to accept data and must be done before the operating system software is installed or files are stored.

**CAUTION: Formatting a disk destroys stored software and data. If any software or data is already stored on the disk, back up your disk before formatting. If your disk is new, it should not have any information stored on it. (Refer to the operating system software documentation for disk back up procedures.)**

To format a fixed disk, complete the following steps. If you are going to format more than one fixed disk, format the first fixed disk by completing all the steps below. Then complete all the steps again to format the second fixed disk.

1. Check to be sure the system is in console mode. Console mode is indicated by the console prompt ( >>> ) on the monitor screen. After you have tested the MicroVAX 2000, it should be in console mode.

If the console prompt does not appear on the screen, press the halt button on the rear of the system unit. The halt button is identified with an encircled triangle or halt icon.



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2. At the console prompt, type **TEST 70** and press **RETURN**.  
The following text appears on the console terminal screen:

```
KA410-A RDRXfmt
VSfmt_QUE_unitno (0-2) ?
```

3. Type the number **0** to format a fixed disk drive in the system unit. Type the number **1** to format a fixed disk drive in the expansion box.

If everything is working normally, the following text is displayed:

```
VSfmt_STS_Siz
```

If you have typed an incorrect number, the following text is displayed:

```
VSfmt_RES_ERR #1
```

If an error message occurs, start over at the first step of the formatting procedure. If you continue to see the error message, refer to the *MicroVAX 2000 Owner's Manual*, Chapter 2, for information on isolating and solving problems.

If the formatter is working successfully, you will see the following text displayed as the formatter program determines the type of fixed disk drive you have selected for formatting. In the following example, the RD32 is the disk being formatted.

```
VSfmt_STS_Siz ..... RD32
```

If you see the following error messages:

```
VSfmt_STS_Siz .....??
```

or

```
VSfmt_RES_Err # 2
84 FAIL
>>>
```

there is a problem with the fixed disk drive. Refer to the *MicroVAX 2000 Owner's Manual*, Chapter 2, for information on isolating and solving problems. If the drive is formatting properly, the following is displayed:

```
VSfmt_QUE_SerNbr (0-999999999) ?
```

4. Type the serial number of the disk and press RETURN. The serial number is located on the packing slip. If there are any letters in the serial number, do not type them in; type only the numbers. DIGITAL recommends that you type in the serial number, though you may type in any number. If you are formatting more than one fixed disk, each number must be unique.

The following text is displayed:

```
VSfmt_QUE_RUsure (DUAx 1/0) ?
```

5. Type the number 1 and press RETURN to tell the formatting program to continue. If for any reason you do not want to continue, type any number other than 1. If you do this the formatter will stop and you will see the following message:

```
VSfmt_RES_Abtd  
84 FAIL  
>>>
```

If you choose to stop the formatter, you must restart at the first step of the formatting procedure when you are again ready to format a drive.

If you choose to continue, the following message is displayed gradually. It takes approximately 15 minutes to format an RD32 disk, and 25 minutes to format an RD53 drive.

```
VSfmt_STS_RdMbb .....OK  
VSfmt_STS_FMTing.....OK  
VSfmt_STS_ChkPss.....OK  
VSfmt_STS_BBRvec := x  
VSfmt_RES_Succ  
>>>
```

If you see this message in its entirety, the disk has been successfully formatted and is ready for use.

If there is a problem, one of the following two messages is displayed:

```
VSfmt_STS_Fmtng.....??  
VSfmt_RES_ERR #3  
84 FAIL  
>>>
```

OR

**Vsfmt\_STS\_ChkPss 1.....??**

**VS\_RES\_ERR #4**

**84 FAIL**

**>>>**

If you see either of these messages, refer to the *MicroVAX 2000 Owner's Manual*, Chapter 2, for information on isolating and solving problems.

Proceed to the next section, **Setting the Default Boot Device.**

## SETTING THE DEFAULT BOOT DEVICE

The default boot device should be set when you determine where the operating system software is to reside. The MicroVAX 2000 then boots from that device at power up. The operating system software can reside in one of the following places:

- on a fixed disk in the system unit,
- on a fixed disk in the expansion box, or
- on a remote system that you access through the ThinWire Ethernet

The default boot device should be set to one of these. Table 2 shows the names assigned to each of the devices. (There are other possible devices, but the devices listed are for storing MicroVMS and ULTRIX operating system software.)

**Table 2: Boot Device Names**

Device and Location	Device Name
Fixed disk in system unit	DUA0
Fixed disk in expansion box	DUA1
Mass storage on remote system	ESA0

To set the default boot device:

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 rear of the MicroVAX 2000 system unit.
2. At the console prompt, type TEST 51, then press RETURN.
3. Since no boot device has been selected yet, the following is displayed:

```
.... ? >>>
```

Type the name of the default boot device and press RETURN. Table 2 contains a list of default boot device names.

To change the default boot device to another device, type in the new boot device name and press RETURN. To change the default boot device back to no default boot device, type in a period ( . ) and press RETURN.

## CONNECTING THINWIRE ETHERNET

The ThinWire Ethernet cable connects the MicroVAX 2000 to a network. If your system contains the optional network module and connector, use the *VAXstation 2000*, *MicroVAX 2000*, and *VAXmate Network Guide* to install the ThinWire Ethernet cable and other network hardware. You may also contact your service representative to install your network hardware.

## WHERE TO GO FROM HERE

### Install the Operating System Software.

Before installing the operating system software, you should do the following:

1. Check with your system manager to determine the need to install operating system software on a fixed disk in your MicroVAX 2000 system unit or expansion box. If you will be using a host system through ThinWire Ethernet, you may not need to install operating system software.
2. Format any fixed disks as instructed in *Format the Fixed Disk*.
3. Choose the default boot device as instructed in *Set the Default Boot Device*.
4. Read the *MicroVAX 2000 Owner's Manual*, Chapter 1, to learn about system operation.
5. For systems using the ULTRIX operating system, set the terminals and printers for 7-bit ASCII. (Refer to the documentation that shipped with these devices.)

To install the MicroVMS or ULTRIX operating system software on the the MicroVAX 2000, follow the instructions that were shipped in the software carton. During the software installation, the operating system software is transferred from the installation medium (tape cartridge or diskette) to the fixed disk in the MicroVAX 2000 system unit or expansion box. You must have a tape drive or diskette drive in your MicroVAX 2000 system to load software locally (as opposed to remotely, over the ThinWire Ethernet).

You may also remote-install the operating system software from another system over the ThinWire Ethernet network onto your fixed disk. For information about remote installation of the MicroVMS operating system, refer to the *VAX/VMS Guide to Ethernet VAXclusters*. For information about remote installation of the ULTRIX operating system, refer to the *ULTRIX-32 Network Management Guide* and *ULTRIX-32 Basic Installation Guide for the MicroVAX 2000*.

## **Related Documents**

For a list of documents and their order numbers, see the *MicroVAX 2000 Owner's Manual*, Appendix B (Related Documentation).

arrangement to be left

with a view to the effect of the arrangement to be left  
in the hands of the person to be left