MicroVAX Troubleshooting and Diagnostics

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Preface

Troubleshooting is the process of isolating and diagnosing problems with your system. When your system does not operate as described in *Operation*, use the information in this guide to diagnose the problem.

This book contains troubleshooting information for all MicroVAX/VAXserver systems: MicroVAX II and MicroVAX 3000-series systems. Appendix A contains diagrams of each MicroVAX system. Using the diagram of your system, follow the troubleshooting procedures recommended in this guide.

This manual contains three chapters:

- Chapter 1 describes problems you may experience at power-on and corrective actions.
- Chapter 2 describes problems you may have during normal operation of your system and corrective actions.
- Chapter 3 describes the MicroVAX Diagnostic Monitor (MDM), a diagnostic tool you can use to test your system periodically or to isolate a particular problem.
- Appendix A contains diagrams of each system showing the location of the controls and indicators.

The troubleshooting techniques described in this manual do not identify all possible problems with your system, nor do the actions suggested remedy all problems. If the actions suggested do not solve the problem, call your DIGITAL service representative.

Chapter 1
Troubleshooting During Power-On

When you power on your system, the MicroVAX processor performs a series of self-tests and start-up routines. After successful completion of the self-tests, if the Break Enable/Disable[1] switch is set to disable, the system attempts to autoboot system software.

1.1 Autobooting the MicroVAX System

The MicroVAX autoboot function is different for each MicroVAX system.

1.1.1 Autobooting MicroVAX 3300/3400/3800/3900 Systems, and MicroVAX 3500/3600 Systems with Version 4.1 ROM Code (or greater)

The MicroVAX 3300, 3400, 3800, 3900 systems, as well as those MicroVAX 3500 and 3600 systems using version 4.1 ROM code or greater, attempt to automatically boot (autoboot) from a specified drive when you have used the Set Boot command (SET BOOT *device name*) from console mode. The system continues to boot from the specified device each time it is powered on until you specify differently by using the Set Boot command again.

If you have not used the Set Boot command, the system boots automatically from the Ethernet port, ESA0.

1.1.2 Autobooting MicroVAX 3500 and 3600 Systems

The MicroVAX 3500 and 3600 systems using version 1.2 or 1.4 ROM code, attempt to autoboot a specific drive when you use the Set Boot command (SET BOOT *device name*) from console mode. The system continues to boot from the specified device each time it is powered on until you specify differently by using the Set Boot command again.

If you have not used the Set Boot command, the system attempts to autoboot by looking for bootable software the same way a MicroVAX II system looks for bootable software. See Section 1.1.3 for more information.

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[1] MicroVAX II systems have a Halt Enable/Disable switch.

Table 1–1: Troubleshooting Power-On Problems

Problem	Possible Cause	Corrective Action
Problems During Self-Tests		
No response when the on/off switch is turned on (switch is not lit).	System is not plugged in.	Set the on/off switch to 0. Plug in the system. Set the on/off switch to 1.
	No power at the wall outlet.	Use a different wall outlet, or check the circuit breaker controlling power to the wall outlet.
	Circuit breaker(s) has tripped.	Set the on/off switch to 0. Reset the circuit breaker(s).[1] Set the on/off switch to 1. If the circuit breaker(s) trips again, call your DIGITAL service representative.
	Power cable is incorrectly installed.	Set the on/off switch to 0. Check that the cable is fully seated in the socket. Set the on/off switch to 1.
The system has power (the on/off switch is lit), but nothing displays on the console terminal.	Console terminal is turned off.	Turn on the console terminal.
	Console terminal is off-line.	Put the terminal on-line. Refer to the terminal documentation for instructions.
	Console terminal cable is not installed correctly.	Make sure the cable is installed properly at both ends.
	Console terminal Set-Up has not been done correctly.	Reread the section, Install the Console Terminal, in your system-specific *Installation* manual.
	Baud rate setting of the system and the terminal do not match.	Set the terminal baud rate to match the system. The normal operating setting is 9600.
	Power-Up Mode switch on the CPU panel is set to T.	Set the switch to Run (indicated by an arrow).
	Terminal is defective.	Turn off terminal and turn it on again to see if it passes its self-tests. If it fails self-tests, call your DIGITAL service representative.

[1] Locate and reset the circuit breaker(s) on your system using the diagrams in Appendix A.

Table 1–1 (Cont.): Troubleshooting Power-On Problems

Problem	Possible Cause	Corrective Action
The countdown does not continue from 2 through 0, even though the Halt Enable/Disable switch is set to disable. The message "?4D DEVOFFLINE" displays on the console terminal.	The system disk is offline.	Set the Ready button to the out position (glows green).
The countdown does not continue from 2 through 0, even though the Halt Enable/Disable switch is set to disable. The message "?42 NOSUCHFILE" displays on the console terminal.	The system disk contains no bootable system software.	Install system software.
The countdown does not continue from 2 through 0, even though the Halt Enable/Disable switch is set to disable. The message "?4C CTRL ERR" displays on the console terminal.	A problem exists with the controller or fixed disk.	Run the MDM software as described in Chapter 3.
Problems Booting from an RA60 Removable Disk Drive		
The countdown does not continue from 2 through 0, even though the Break Enable/Disable[2] switch is set to disable. The system cannot load system software from the RA60 disk.	The system disk is write-protected. The Write-Protect button is in (lit).	Push in and release the Write-Protect button to the out position. Make sure you know which Write-Protect button corresponds to the disk containing system software.
	The disk is not spun-up. The Run/Stop button on the disk drive control panel was not set to the in position.	Set the Run/Stop button on the disk drive control panel to the in position. Open the front door of the cabinet and press the Reset[3] button on either power supply.
	The RA60 drive door is unlocked.	Close the RA60 drive door and make sure the lock release button is out.

[2]MicroVAX II systems have a Halt Enable/Disable switch.

[3]MicroVAX II systems have a Restart button located on the front panel, rather than a Reset button.

Table 1–1 (Cont.): Troubleshooting Power-On Problems

Problem	Possible Cause	Corrective Action
Problems Booting from an RA80-Series Fixed Disk		
The countdown does not continue from 2 through 0, even though the Break Enable/Disable[2] switch is set to disable. The system cannot load system software from a fixed disk.	The system disk is write-protected. The Write-Protect button is in (lit).	Push in and release the Write-Protect button to the out (unlit) position. Make sure you know which Write-Protect button corresponds to the disk containing system software.
	The disk is not spun-up. The Run/Stop button on the disk drive control panel was not set to the in position.	Set the Run/Stop button on the disk drive control panel to the in position. Open the front door of the cabinet and press the Reset[3] button on either power supply.
	The disk drive circuit breaker is tripped.	Press the Run/Stop button on the disk drive control panel to the out position. Reset the circuit breaker on the disk drive by pushing it down, then up again. Press the Run/Stop button to the in position. Press the Reset[3] button on either power supply.
	A problem exists with the controller or fixed disk.	Run the MDM software described in Chapter 3.
The countdown does not continue from 2 through 0, even though the Break Enable/Disable[2] switch is set to disable. The message "?4D DEVOFFLINE" displays on the console terminal.	The RA80 is off-line. Neither the A nor the B button on the disk drive control panel was set to the in position when the system was turned on.	Set the appropriate port button, A or B (or both), on the disk drive control panel to the in position. Press the Reset[3] button on either power supply.
The countdown does not continue from 2 through 0, even though the Break Enable/Disable[2] switch is set to disable. The message "?42 NOSUCHFILE" displays on the console terminal.	The system disk contains no bootable system software.	Install system software.

[2] MicroVAX II systems have a Halt Enable/Disable switch.

[3] MicroVAX II systems have a Restart button located on the front panel, rather than a Reset button.

Table 1–1 (Cont.): Troubleshooting Power-On Problems

Problem	Possible Cause	Corrective Action
The Fault light is lit. The message "?4C CTRL ERR" displays on the console terminal.	A problem exists with the controller or fixed disk.	Press the Fault button twice. RA70 lights and indicators may begin to flash. If the RA70 lights and indicators do not flash or stop flashing, your system may have corrected itself. Run the MDM software as described in Chapter 3. If RA70 lights and indicators continue to flash, there is a problem with the controller or fixed disk. Call your DIGITAL service representative.

Problems Booting from an RA90 Fixed Disk

Problems with the RA90 drive are indicated by the Fault indicator on the front panel of the drive. If the Fault indicator lights, or if no front panel activity occurs at power-up, select the Fault switch on the drive's front panel. When you select the Fault switch, a fault code should display on the control panel.

0F displays when you select the Fault switch.	The drive is write protected.	Disable the write protection by deselecting the Write-Protect switch at the RA90 control panel or turn off software write protection.
22 displays when you select the Fault switch.	The drive is overheated.	Spin down and remove power from the drive. Ensure the front filter is clean and that room temperature is within recommended limits. Call your DIGITAL service representative if the filter or temperature has not caused the overheating.
2D displays when you select the Fault switch.	The drive is overheated.	Spin down and remove power from the drive. Ensure the front filter is clean and that room temperature is within recommended limits. Call your DIGITAL service representative if the filter or temperature has not caused the overheating.
6F displays when you select the Fault switch.	There is a write-protect error.	Disable the write protection by deselecting the Write-Protect switch at the RA90 control panel or turn off software write protection.
A fault code other than those described above displays when you select the Fault switch.		Call your DIGITAL service representative.

Table 1–1 (Cont.): Troubleshooting Power-On Problems

Problem	Possible Cause	Corrective Action
	Diskette is not bootable (does not contain a bootstrap program).	Use a diskette containing a bootstrap program to start system software.
	Diskette is worn or damaged.	Try another diskette.
Problems Booting from a Tape Cartridge		
System does not boot (the countdown does not continue from 2 to 0) or boots from another device (the wrong software displays on the console terminal).	No tape cartridge in the tape drive.	Insert a cartridge containing system software into the tape drive.
	Fixed-disk drive is on-line. Your system starts from the fixed disk, if it is on-line.	Place the fixed disk off-line.
	Tape is not bootable (does not contain a bootstrap program).	Use a tape containing a bootstrap program to start system software.
	Tape is worn or damaged.	Try another tape cartridge.
	A problem exists with the controller or tape drive.	Call your DIGITAL representative.

Chapter 2
Troubleshooting During Normal Operation

Problems that occur during normal operation of your system may result from a defect in the system, from faulty settings, or from incorrect procedures.

Table 2–1 lists problems, possible causes, and corrective actions. If the actions listed do not solve the problem, call your DIGITAL service representative.

Table 2–1: Troubleshooting Operation Problems

Problem	Possible Cause	Corrective Action
System Problems		
System loses power during operation. The on/off switch is not lit.	The system has become unplugged.	Set the on/off switch to 0. Plug in the system. Set the on/off switch to 1.
	No power at the wall outlet.	Use a different wall outlet, or check the circuit breaker controlling power to the wall outlet.
	Circuit breaker(s) has tripped.	Set the on/off switch to 0. Reset the circuit breaker(s).[1]Set the on/off switch to 1. If the circuit breaker(s) trips again, call your DIGITAL service representative.
	Power cable is incorrectly installed.	Set the on/off switch to 0. Check that the cable is fully seated in the socket. Set the on/off switch to 1.
The system loses power during operation, but the on/off switch is lit.	The power supply has failed.	Check the DC OK light(s). An unlit DC OK light indicates a power supply problem. Turn off your system and call your DIGITAL service representative.

[1]Locate and reset the circuit breaker(s) on your system using the diagrams in Appendix A.

Table 2–1 (Cont.): Troubleshooting Operation Problems

Problem	Possible Cause	Corrective Action
22 displays when you select the Fault switch.	The drive is overheated.	Spin down and remove power from the drive. Ensure the front filter is clean and that room temperature is within recommended limits. Call your DIGITAL service representative if the filter or temperature has not caused the overheating.
2D displays when you select the Fault switch.	The drive is overheated.	Spin down and remove power from the drive. Ensure the front filter is clean and that room temperature is within recommended limits. Call your DIGITAL service representative if the filter or temperature has not caused the overheating.
6F displays when you select the Fault switch.	There is a write-protect error.	Disable the write protection by deselecting the Write-Protect switch at the RA90 control panel or turn off software write protection.
A fault code other than those described above displays when you select the Fault switch.		Call your DIGITAL service representative.
RD-Series Fixed-Disk Problems		
Fixed-disk write error message displays.	Disk is write-protected.	Release the write protection for the disk. Refer to your system-specific *Operation* manual for instructions on operating your RD-series fixed disks.
Fixed-disk read error message displays.	*MicroVAX II Systems:* Disk is off-line because the Ready button is in (not lit).	Press and release the Ready button (glows green) to put fixed disk on-line.
RF-Series Integrated Storage Element (ISE) Problems		
ISE write error message displays.	ISE is write-protected. (Write-Protect button glows orange).	Press and release Write-Protect button (not lit).
The Fault light is lit or begins to flash.	A problem exists with the controller or ISE.	If the Fault light stops flashing, the system may have corrected itself. Run the MDM software as described in Chapter 3. If the Fault light remains lit, call your DIGITAL service representative.

Table 2–1 (Cont.): Troubleshooting Operation Problems

Problem	Possible Cause	Corrective Action
	Diskette is not formatted.	Use a preformatted RX50 diskette.
	Diskette is worn or damaged.	Try another diskette.
	Diskette is write-protected.	Remove the write-protect tab.
TK70 Tape Drive Problems		
Green light blinks rapidly after you insert the tape.	Tape cartridge leader is defective.	Pull the handle open and remove the cartridge. Use another cartridge.
Orange, yellow, and green lights blink in unison.	A problem with the drive.	Press the Unload button once. If the orange and green lights go out and the yellow light blinks, the cartridge is unloading. When the green light comes on and you hear the beep, remove the tape cartridge. If all three lights continue to blink after you press the Unload button, the fault is not cleared. Do not try to remove the cartridge. Call your DIGITAL service representative.
Handle does not move.	Power-on test is still in progress.	If you are trying to insert a cartridge, wait for the orange and yellow lights to go off and the green light to remain on steadily. Then try again.
	Tape drive is active.	Do not attempt to move the handle while the yellow light is on.
Handle does not lock.	Cartridge is not inserted properly.	Reinsert the tape cartridge. If the problem persists, call your DIGITAL service representative.
Cartridge does not unload.	Unload button is not working properly.	Try unloading the cartridge with a software command. Refer to your system software manuals.
TK70 passes power-on self-test but does not work.	The controller may be bad, or the connection between the drive and the controller may be loose.	Call your DIGITAL service representative.

Table 2–1 (Cont.): Troubleshooting Operation Problems

Problem	Possible Cause	Corrective Action
TSV05 and TU81–Plus Tape Drive Problems		
The drive does not power up.	The circuit breaker(s) has tripped.	Set the on/off switch to 0. Reset the circuit breaker(s).[1] Set the on/off switch to 1. If the circuit breaker(s) trips again, call your DIGITAL service representative.
	The switch on the power controller is set to B.	Set the switch to A.
	No power at the wall outlet.	Use a different wall outlet or check the circuit breaker controlling power to the wall outlet.
	The system has become unplugged.	Set the on/off switch to 0. Plug in the system. Set the on/off switch to 1.

[1] Locate and reset the circuit breaker(s) on your system using the diagrams in Appendix A.

Chapter 3
Running the MicroVAX Diagnostic Monitor (MDM)

The MicroVAX Diagnostic Monitor (MDM) is a software package containing diagnostic tests designed to isolate and identify faults in your MicroVAX system. MDM also permits you to display your system configuration, reformat disks, and, if your system has two or more megabytes of memory, test how devices work together. The diagnostic tests are packaged with your system on either RX50 diskettes (labeled MV DIAG CUST RX50) or a tape cartridge (labeled MV DIAG CUST TK50). MDM operating instructions begin in Section 3.2.

CAUTION: *If your system is connected to a cluster, notify your cluster manager before halting the system to load MDM.*

You generally run MDM in three situations:

- Before you install system software on a new system
- When you receive an error message or experience a problem with your system
- When you want to test your system periodically to ensure that all components are operating correctly

How the MDM Tests Work

MDM tests individual devices in your system. However, MDM performs limited diagnostics:

- It performs reads from each drive and checks each controller. The customer tests do not write to the drives as writing to the drives could destroy data.

  NOTE: *MDM will test a tape drive or diskette drive only when the media (tape or diskette) is inserted in the drive.*

- It checks only devices themselves and not the connections or lines between peripheral devices and the system.

to target systems from a host system, the time required to load MDM is reduced significantly.

3.1.2 Running MDM on a VAXserver 3602 System

If you have a VAXserver 3602 system, the CPU in the secondary cabinet cannot boot diagnostic software from a tape cartridge. You must down-line load the diagnostic software from the primary cabinet.

The MicroVAX Ethernet Server Customer Diagnostics Kit contains the MDM diagnostic software and a *MicroVAX Diagnostic Monitor Ethernet Server User's Guide*. The user's guide describes how to install MDM software on a host VMS or MicroVMS operating system and how to down-line load MDM to a diskless target system, using the DECnet/Ethernet network facilities.

3.1.3 Installing MDM on RF-series ISE or Hard Disk

MDM software can be installed on an RF-series ISE or an RA-, RD-series hard-disk drive using the MDM Hard Disk Kit. Installation of the MDM Hard Disk Kit requires the completion of the "Diagnostic Software Installation Acknowledgment" by the customer. See the *MicroVAX Diagnostic Monitor Hard Disk User's Guide* for the licensing requirements and installation instructions.

NOTE: *The MDM Hard Disk Kit is required for dual-host systems where one host is a tapeless system.*

3.1.4 Running MDM on a Dual-Host System

In a dual-host configuration, two MicroVAX systems in the same VAXcluster share their ISEs through a Digital Storage System Interconnect (DSSI) bus. Each system can directly access any of the ISEs in either system; this can include a shared common system disk.

Before running MDM diagnostics on a dual-host system, your system must be properly configured (systems ordered as dual-host systems are properly configured at the factory) and the DSSI cable connecting the two hosts must be in place.

Diagnostics must be performed separately for each host. The procedure for running diagnostics differs depending on whether one host is a tapeless system (no tape drive) or each host has its own tape drive. Use the instructions in Section 3.1.4.1 to run diagnostics in a dual-host system with one tape drive. Use the instructions in Section 3.1.4.2 to run diagnostics in dual-host systems with a tape drive in each host.

3.1.4.2 Running MDM on a Dual-Host System with Two Tape Drives

Run diagnostics on dual-host systems with two tape drives according to the following procedure:

NOTE: *You can also use the MDM Hard Disk Kit as described in the previous section.*

1. If software is installed on the system, warn all users to log off and perform system shutdown, as described in your system software manuals. Turn off both hosts.
2. Make sure the Write-Protect switch on the tape cartridge containing the MDM diagnostics is in the write-protect position.
3. Set the Break Enable/Disable switch on both hosts' CPU panels to enable (up, dot inside the circle).
4. Turn on both hosts.

   Result: The normal power-on countdown should appear on the console terminal. After the countdown, you should see the >>> prompt indicating console mode.
5. Insert the tape cartridge containing the MDM software into the tape drive in one host system and lock it into place. For the same host, use the command BOOT MUA0 to tell your system to load the MDM software from the tape cartridge.
6. Run the diagnostics as described in this chapter.
7. When you have completed the tests on the first host, remove the tape cartridge by following the procedure described in your system-specific *Operation* manual. Press the Reset button on that same host. When the countdown completes and the >>> prompt appears, insert the tape cartridge into the tape drive in the second host and lock it into place. Use the command BOOT MUA0 to boot the tape and run the diagnostics as you did for the first host.

3.2 Starting MDM

CAUTION:

Before you run the MDM software:

- *Be sure you understand the instructions in your system-specific Operation manual (contained in this documentation kit) for using the device appropriate for your diagnostic media — either the RX50 diskette drive or the TK50/TK70 tape drive.*

Result: Within a few moments you should see the MDM introductory display.

6. Make sure the current date and time in the introductory display are correct. If the date and time are correct, press Return to continue. If incorrect, type the correct date and time, using the format shown in the MDM introductory display screen. For example, enter 25–DEC–1988 02:30 and press Return to continue.

   Result: Within moments the Main Menu appears. Section 3.3 describes options on the Main Menu.

7. When you select a menu option, you may be asked to insert additional diskettes. Insert the specified diskettes when prompted by the system. If your system does not request all the diskettes containing diagnostic software, your configuration does not need the additional diskettes for testing.

   Result: After a few minutes, you receive a message that the various diagnostics are configuring and that the system is ready for testing.

When you press Return, the selected option will continue.

3.2.2 TK50/TK70 Instructions

The diagnostics run the same way whether or not system software, such as VMS, ULTRIX–32, or VAXELN, has been loaded. You can manually boot the diagnostic software or use the autoboot feature to automatically boot the software. The following sections explain how to boot MDM manually and automatically, as well as how to boot MDM on VAXserver 3602 systems. Carefully follow the directions for setting switches.

NOTE: *Before running MDM on your TK50 or TK70 tape drive, you may want to reread the tape drive operating instructions found in your system-specific Operation manual.*

3.2.2.1 Booting MDM Manually

NOTE: *Before booting MDM on a system with software installed, warn all users to log off and perform system shutdown, as described in your system software manuals.*

1. Make sure the Write-Protect switch on the tape cartridge is in the write-protect position.
2. If your system contains system software, write-protect all disk drives and RF-series ISEs.

If you are using a TK50, press the Load/Unload button to the load (in) position.

Result: While the system loads MDM, the power-on countdown appears on the screen. Loading the software takes several minutes. An indicator light on the tape drive flashes while loading occurs. (If you are using a TK50 tape drive, a green light flashes. If you are using a TK70 tape drive, a yellow light flashes.)

Section 3.2.2.4 describes the display you see when loading is completed.

NOTE: *When loading is completed, place all RF-series ISEs on-line. If the ISEs are not on-line, they cannot be tested completely.*

3.2.2.3 VAXserver 3602 Systems

You must run MDM software differently for each cabinet in the VAXserver 3602 system. To run MDM in the primary cabinet, follow the instructions in either of the previous two sections. To run MDM in the secondary cabinet, you must load the Ethernet server diagnostic software into the primary cabinet and down-line load it to the secondary cabinet.[1] The Ethernet server diagnostic software is supplied with your system on a tape cartridge labeled MV ENET CUST DIAG. Instructions for down-line loading the software to the secondary cabinet are in the *MicroVAX Diagnostic Monitor Ethernet Server User's Guide* supplied with your system.

3.2.2.4 MDM TK50/TK70 Introductory Screen

When MDM software is loaded, the MDM introductory screen displays. Make sure the current date and time in the introductory display are correct. If the date and time are correct, press Return to continue. If incorrect, type the correct date and time, using the format shown in the MDM introductory screen display. For example, enter 25–DEC–1988 02:30 and press Return to continue. The Main Menu appears. Section 3.3 describes options on the Main Menu.

[1] To run MDM in the secondary cabinet, the VMS or ULTRIX operating system must be installed in the primary cabinet.

As each device passes the test, it is listed on the screen.

NOTE: *Because of the internal similarity of some communications options, the diagnostic test sees these options as the same device. A DHV11 and DHQ11 appear the same to the diagnostic test. A generic device name, DH–CX0, is listed for similar communications options. The last letter in each device name differentiates among multiple devices of the same type. For example, DH–CX0A indicates one communications option, DH–CX0B a second, and so forth.*

If a device fails the test, you receive a failure message.

Each failure message identifies the device being tested, when the failure occurred, and the field replaceable unit (FRU). Copy the failure message and report it to your DIGITAL service representative. Figure 3–2 shows an example of an unsuccessful test.

Figure 3–2: Example of an Unsuccessful Test

```
BEGIN FUNCTIONAL TEST

     Device                    Result

     DEQNAA .................  FAILURE DETECTED

     A failure was detected while testing the

          OPTION: DEQNAA  Ethernet controller

     The Field Replaceable Unit (FRU) identified is the:

          Ethernet controller
```

If your system has serious problems, the following message may appear:

```
All devices disabled, no tests run.
```

Report the message to your DIGITAL service representative.

When a failure message occurs, the testing stops.

When all devices pass the first part of the test, the exerciser tests begin. These tests take about four minutes and test how the devices work together. If the tests pass, you receive a success message.

At the end of the system test, press Return to return to the Main Menu. From the Main Menu you can either exit MDM by pressing the Reset button, or pressing and then releasing the Halt button, or you can choose one of the other options.

- CPU — Type of CPU, presence of a floating-point unit (FPU).
- MEM — Total amount of memory in megabytes and pages, number and type of memory modules.
- KFQSA — For systems with the KFQSA storage adapter, the type of DSSI device and its unit number are displayed for each ISE.
- DSIA — For systems with the KA640 CPU, the type of DSSI device and its unit number are displayed for each ISE.
- RQDX — Type, unit number, and description of each mass storage device connected to the controller.
- DELQA, DEQNA, or DESQA — The Ethernet station address.
- NIA — The onboard Ethernet controller for systems with the KA640 CPU.
- Communications devices — The type of device and whether it has modem control.

In addition to showing information about testable device options, MDM displays messages indicating the presence of nontestable system devices. If a device is physically present in the system but is not described under the "System Configuration and Devices" display, one of the following two messages can indicate the reason.

Message 1:

```
No Dg KAA ... Diagnostic not loaded
```

The "No Dg" (no diagnostic) "KAA" (KA630 CPUA) message appears in place of the device name because a diagnostic was not loaded for the CPUA. This can happen when the media is not installed properly or the diagnostic is not present on the media.

MDM displays a "No Dg" message for each DIGITAL device present in the system under these circumstances. For example, if MDM cannot find the TK70 tape drive diagnostic, the message "No Dg TKA" appears. TKA indicates that the device is a TK tape drive.

Figure 3–4: Sample System Utilities Menu

```
MAIN MENU
SYSTEM UTILITIES

  Utility selections are:

  1 - IOADDRES
  2 - RXAA - Disk drive formatter for RQDX controller A.
  3 - RRAA - Update drive unit number for RRD40 controller A.
  4 - RRAB - Update drive unit number for RRD40 controller B.
```

Choose the option by typing the option number listed on the menu and pressing Return.

3.3.3.1 IOADDRES

NOTE: *The "IOADDRES" option is intended for users of Industrial VAX systems. This option is described in detail in the Industrial VAX Troubleshooting manual.*

The "IOADDRES" option supplies a listing of standard Control and Status Register (CSR) addresses and interrupt vectors that MDM uses in testing devices. The first available CSR and interrupt vector for configuring devices with a nonstandard address is also supplied.

The devices in your system were configured properly at the factory. Any new options added to your system are configured properly in the field by a DIGITAL service representative.

3.3.3.2 Customer Disk Drive Formatter

NOTE: *RF-series Integrated Storage Elements are preformatted and cannot be formatted by the customer.*

If your system allows you to format RX33 diskettes, or to format fixed-disk drives, use the following guidelines to make formatting easier.

CAUTION: *Running the formatting utility destroys all data on the disk. Use this utility only if you want to erase the contents of a disk and reinstall system software.*

Formatting Instructions

If you are formatting an RX33 diskette, remove the diskette's Write-Protect tab, insert the diskette into the diskette drive, and lock the lever.

If you are formatting a fixed-disk drive, set the drive's Write-Protect button to write-enable (out).

3.3.5 Select Single Device Tests

The "Select Single Device Tests" option allows you to run tests for a single device. A test of the device's individual circuits, called a "functional test," is performed during the single device tests. The functional test is followed by an "exerciser test" to ensure that the device as a whole is working properly.

When you select the Single Device Tests from the Main Menu, the diagnostics are prepared for testing. If this is the first MDM option you have selected, the diagnostics are automatically loaded. The loading process takes several minutes.

When the preparations and loading are complete, you are prompted to press Return. A screen listing the devices included in your system displays. Figure 3–5 shows an example of such a display.

Figure 3–5: The Single Device Tests Menu

```
MAIN  MENU                                  Release nnn   Test  xx.xx
SELECT SINGLE DEVICE TEST

 Select the device number to be tested. The functional tests
 will be run followed by the exercisers for 4 minutes.

  1 - CPUA - MicroVAX/rtVAX CPU
  2 - MEMA - MicroVAX II Memory System
  3 - RQDXA - Winchester/diskette controller.
  4 - DEQNAA - Ethernet controller
  5 - DZQ11A - Asynchronous line controller.
  6 - DH-CXOA - CXA16/CXB16/CXF32/DHF11-16 lines, No Modem control
  7 - TKXXA - TK50/TK70 CONTROLLER

Type the number; then press the RETURN key,
or type 0 and press the RETURN key to return to the Main Menu. >
```

NOTE: *Because of the internal similarity of some communications options, the diagnostic tests see these options as the same device. A DHV11 and DHQ11 appear the same to the diagnostic test. A generic device name, DH–CX0, is listed for similar communications options. The last letter in each device name differentiates among multiple devices of the same type. For example, DH–CX0A indicates one communications option, DH–CX0B a second, and so forth.*

Select a device for testing by typing the corresponding number and pressing Return.

3.3.6 Exiting MDM

Exit MDM by doing one of the following:

- Press Break.
- Press and then release the Halt button on the operator control panel.
- Press the Reset button.

Remove the RX50 diskette or tape cartridge, as explained in your system-specific *Operation* manual.

If you have run MDM on a new system, you are ready to install your system software. Follow the instructions in your system software manuals. If you have used the Disk Formatter Utility to format a fixed disk or a diskette, you must reinstall system software. Set the Write-Protect button to write-enabled and install system software.

If you have run MDM on a system containing system software, you must reboot your system software.

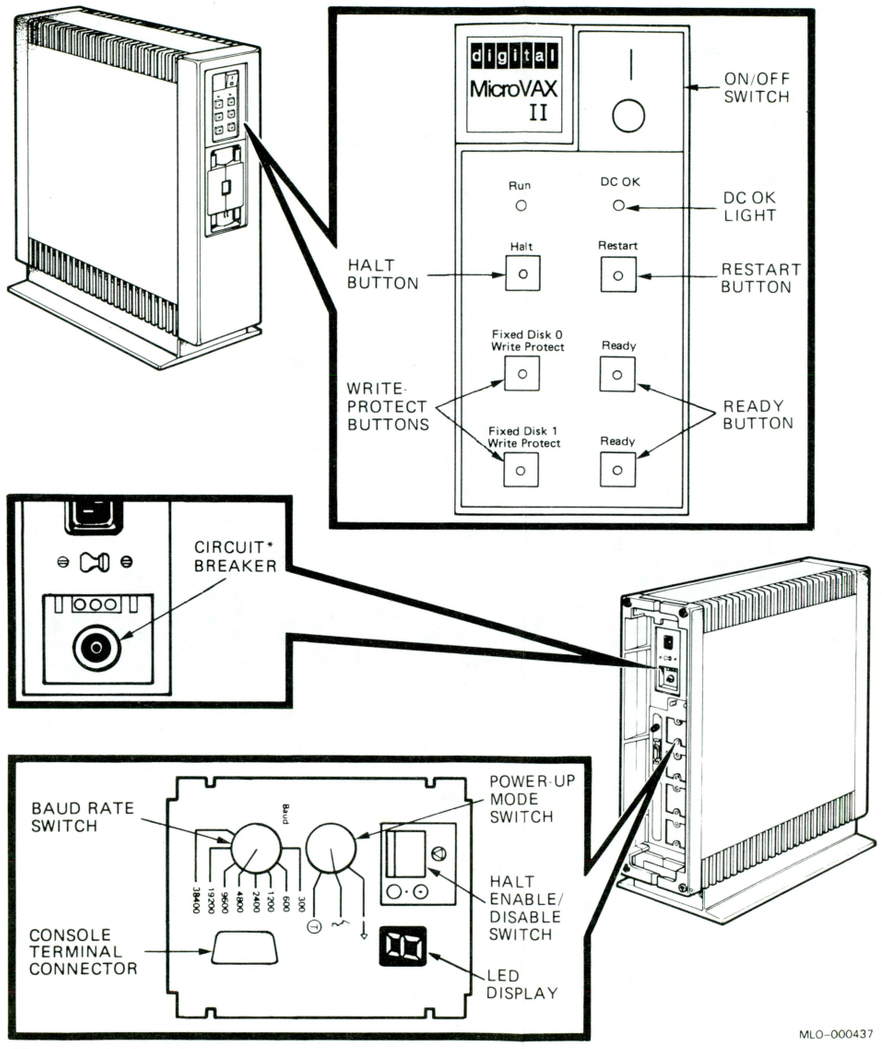
You can reboot your system software in two ways.

- At the console mode prompt >>>, use the command BOOT Dxxx, where Dxxx is the device name of the fixed disk or RF-series ISE containing your system software. (Use DUxx if this is an RD-series disk drive, RA-series disk drive, or an RF-series ISE (with the KA640 CPU). Use DIxx if this is an RF-series ISE (with the KFQSA storage adapter.)) After the system software is loaded, set the Break Enable/Disable switch to disable, indicated by the dot outside the circle, to avoid inadvertently halting the system by pressing the Break key.
- Set the Break Enable/Disable switch to disable and press the Reset button. This causes your system to begin the power-on sequence again and automatically load system software.

Appendix A
Diagrams for Locating Controls on Your MicroVAX System

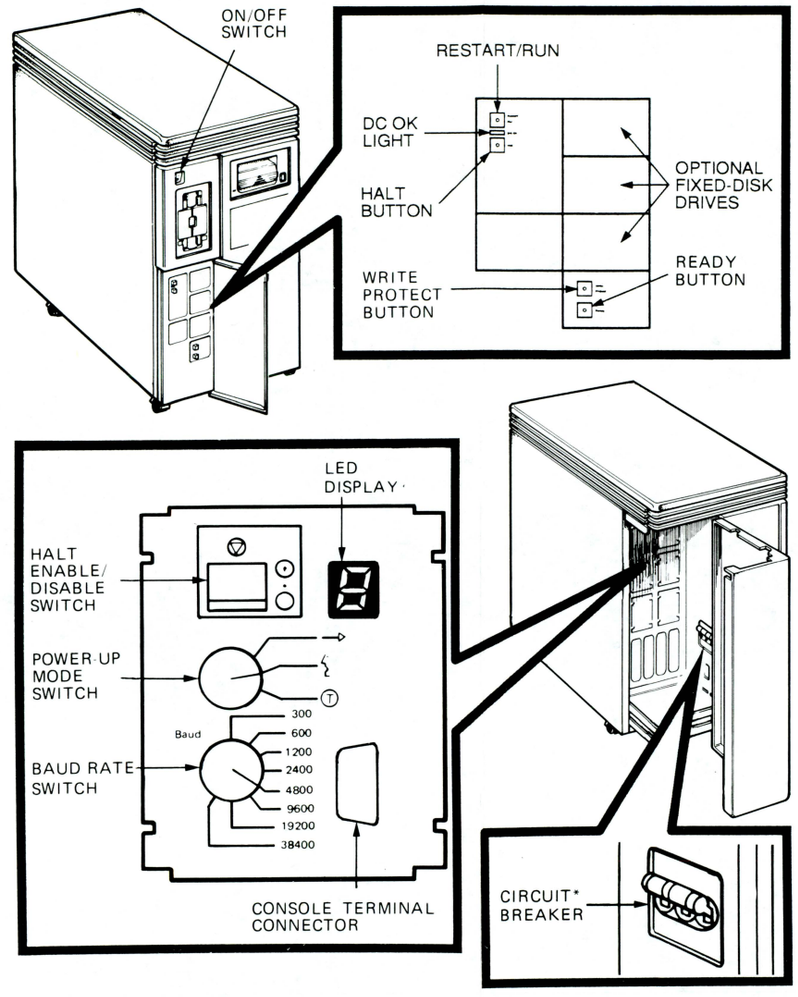
The diagrams in this appendix are to aid in locating the controls on your system that may be referenced during troubleshooting procedures.

Figure A–1: MicroVAX II 630QY Controls and Indicators



*Reset the circuit breaker by pushing it in.

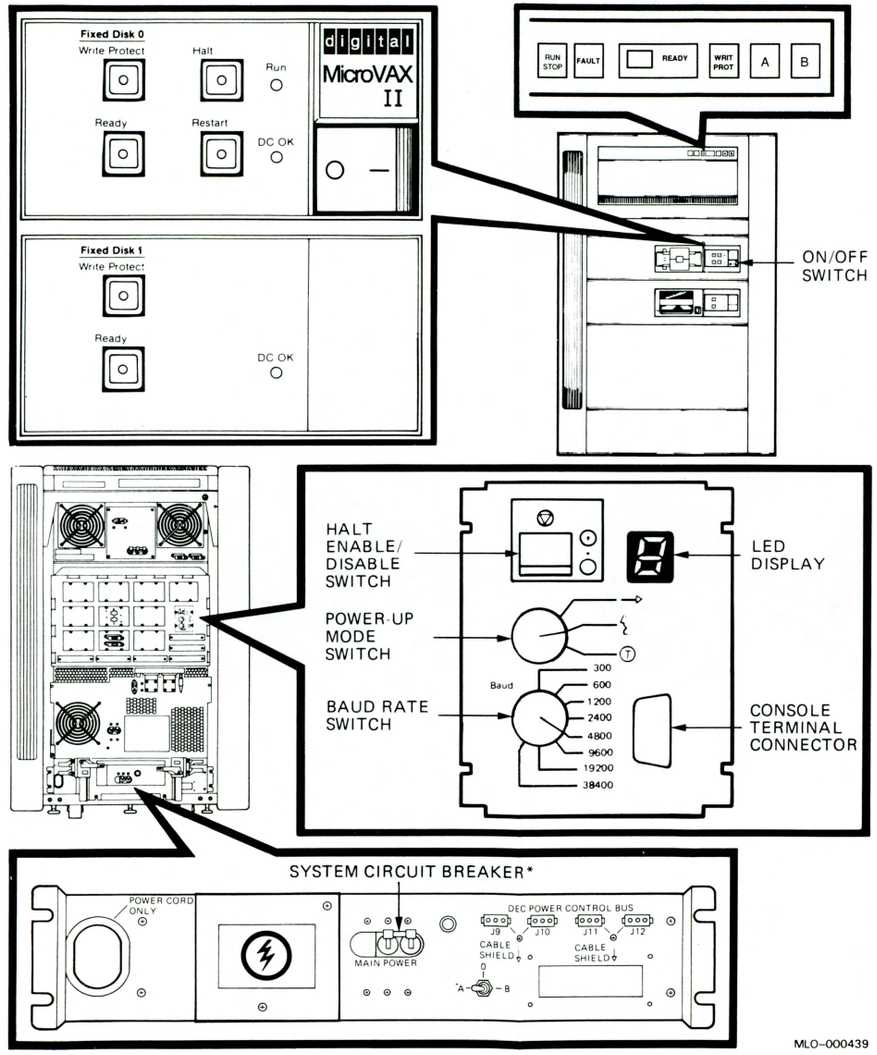
Figure A–2: MicroVAX II 630QB Controls and Indicators



*Reset the circuit breaker by pushing it down and then lifting it to the up position.

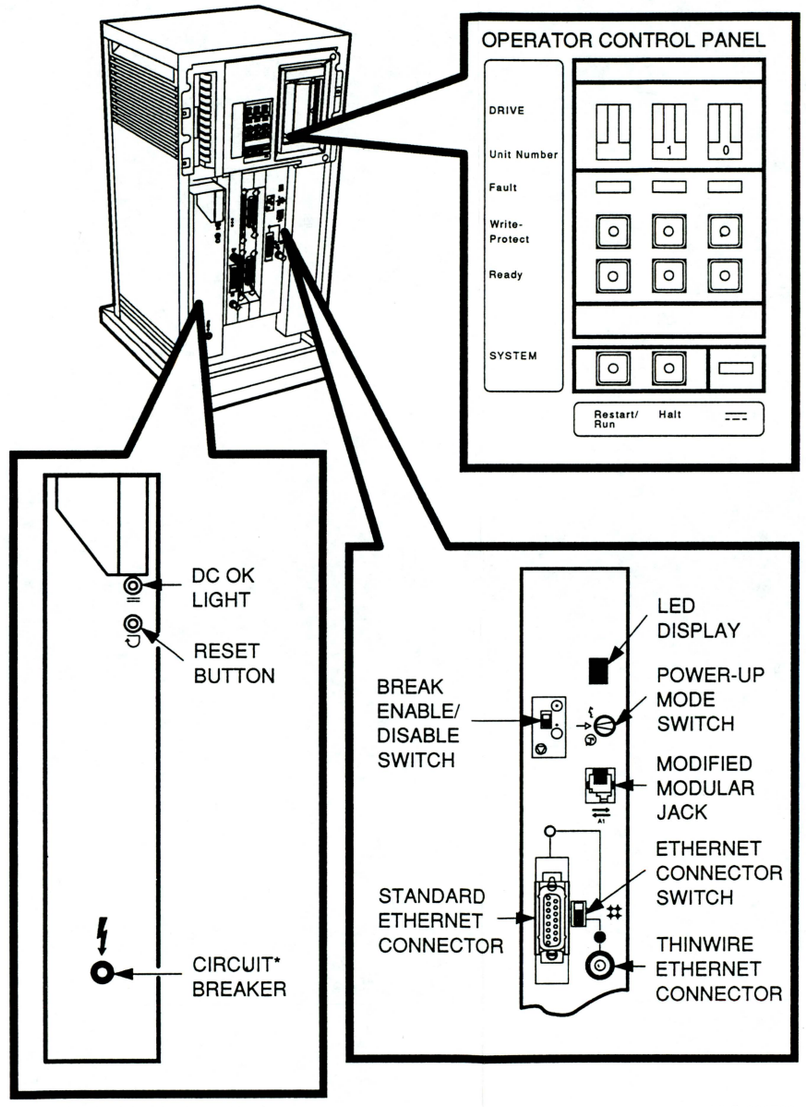
MLO–000438

Figure A–3: MicroVAX II 630QE Controls and Indicators



*Reset the circuit breaker by pushing it down and then lifting it to the up position.

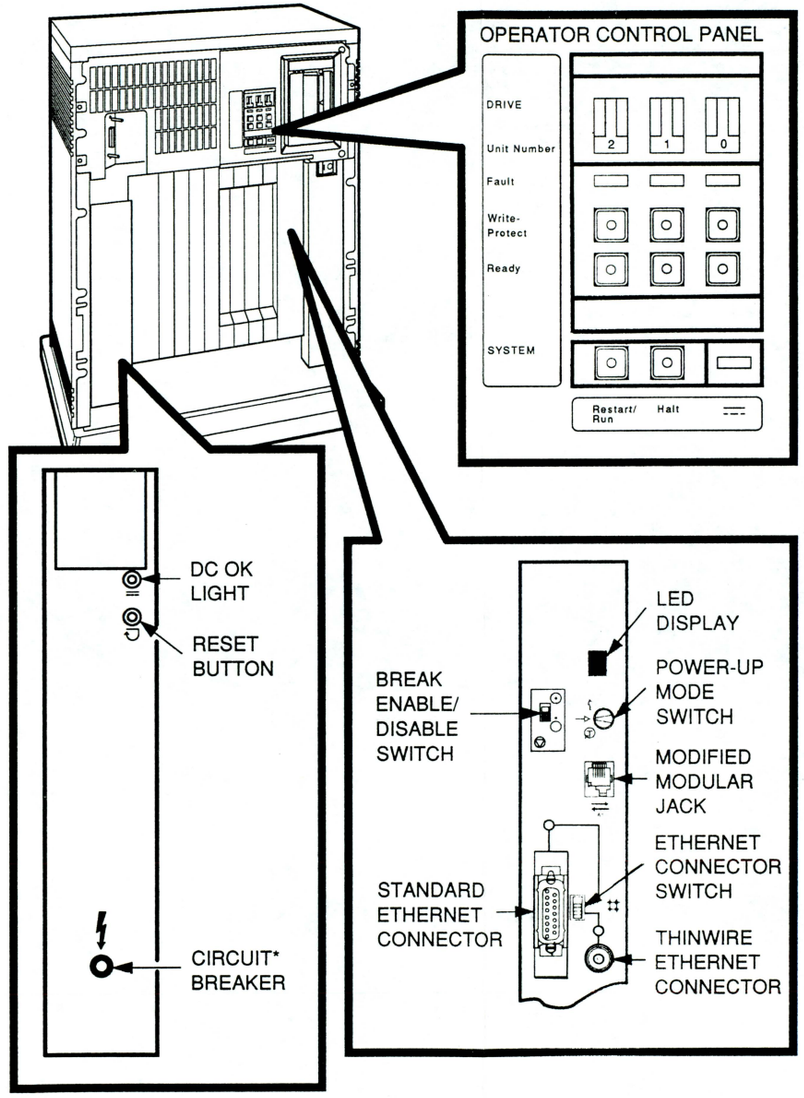
Figure A–4: MicroVAX 3300 Controls and Indicators



*Reset the circuit breaker by pushing it in.

MLO-000723

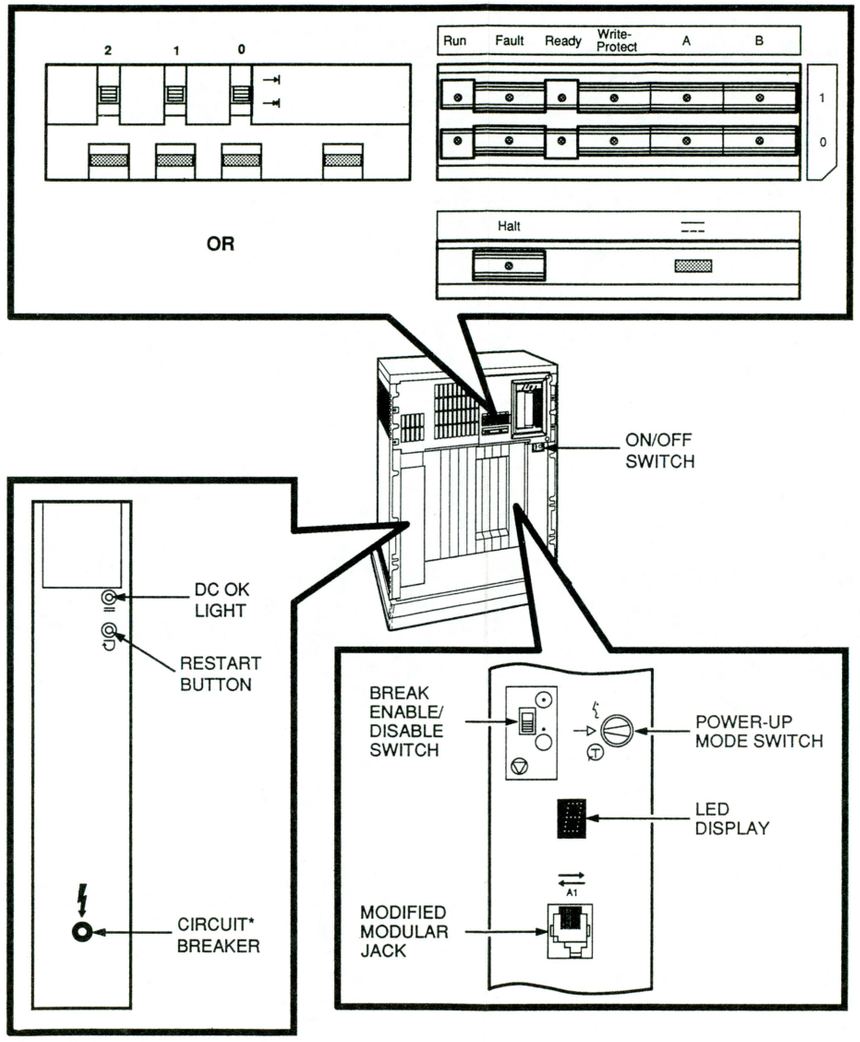
Figure A–5: MicroVAX 3400 Controls and Indicators



*Reset the circuit breaker by pushing it in.

MLO-000724

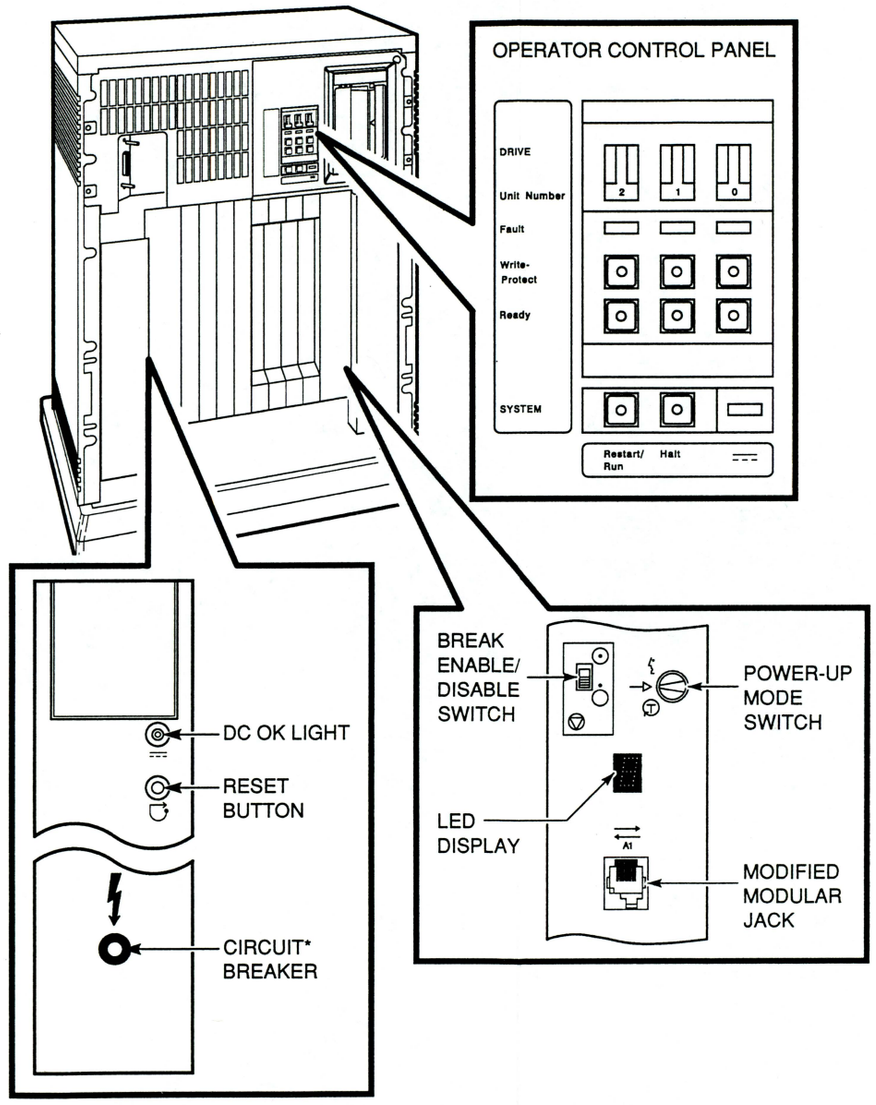
Figure A–6: SDI-Based MicroVAX 3500 Controls and Indicators



*Reset the circuit breaker by pushing it in.

MLO-000440

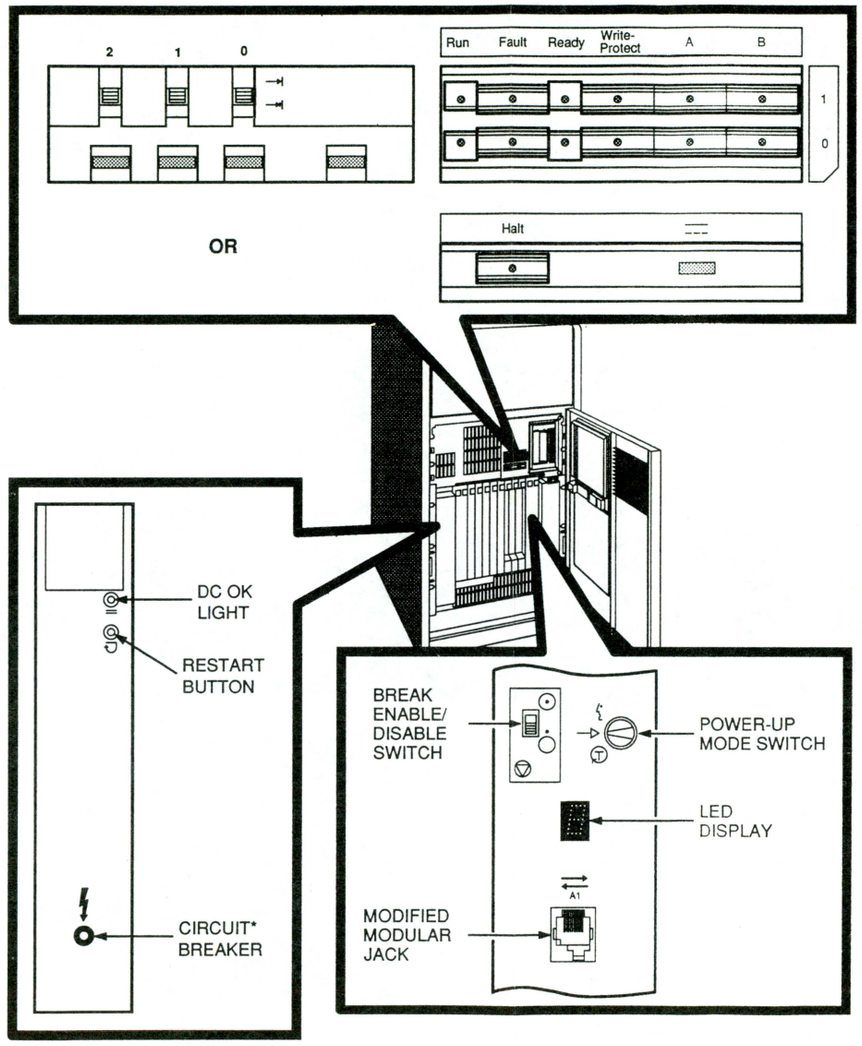
Figure A–7: DSSI-Based MicroVAX 3500 Controls and Indicators



*Reset circuit breaker by pushing it in.

MLO-002396

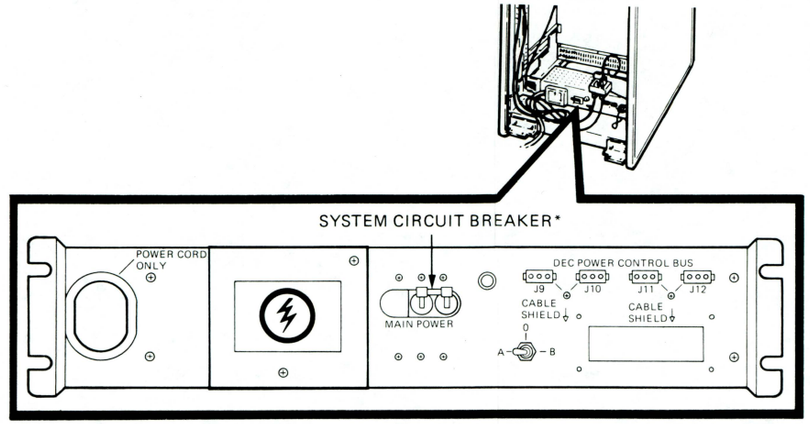
Figure A–8: MicroVAX 3600 Controls and Indicators, Front View



*Reset the circuit breaker by pushing it in.

MLO-000441

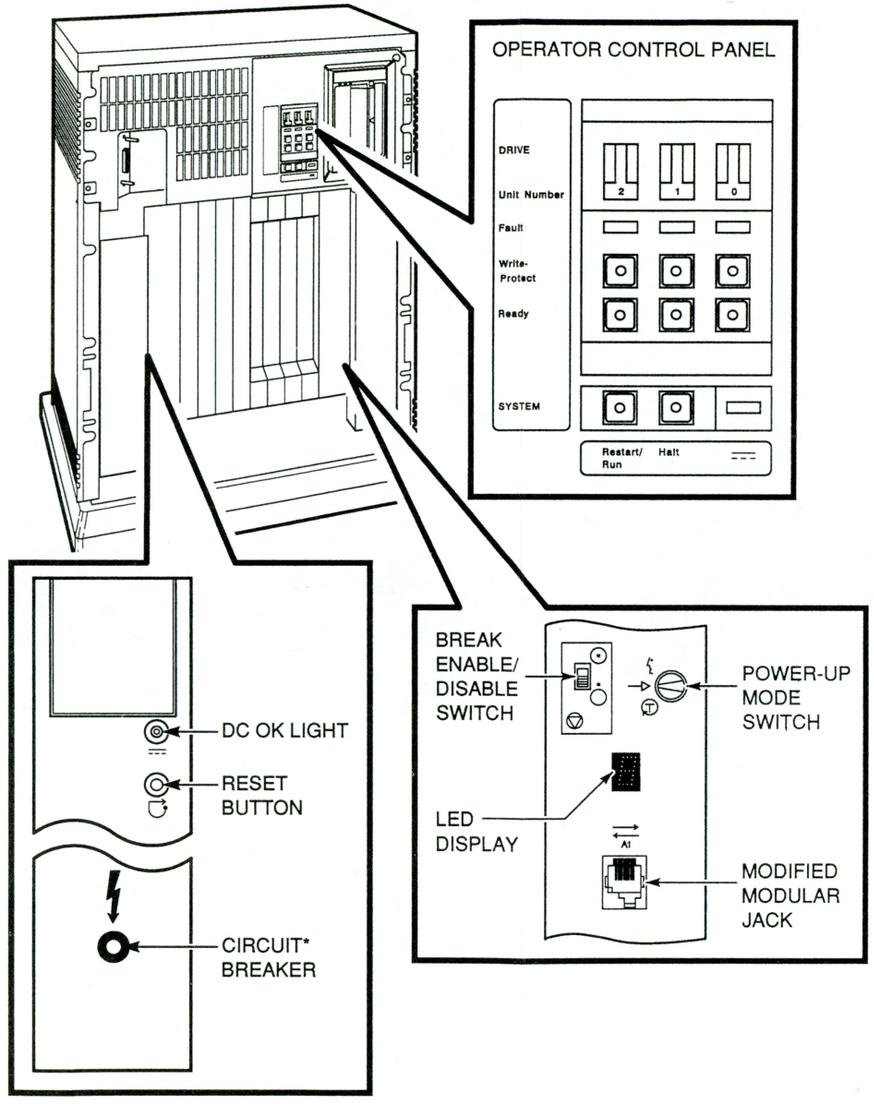
Figure A–9: MicroVAX 3600 Controls and Indicators, Rear View



*Reset the circuit breaker by pushing it down and then lifting it to the up position.

MLO-000442

Figure A–10: MicroVAX 3800 Controls and Indicators



*Reset circuit breaker by pushing it in.

MLO-002396

Figure A–11: MicroVAX 3900 Controls and Indicators, Top Front View

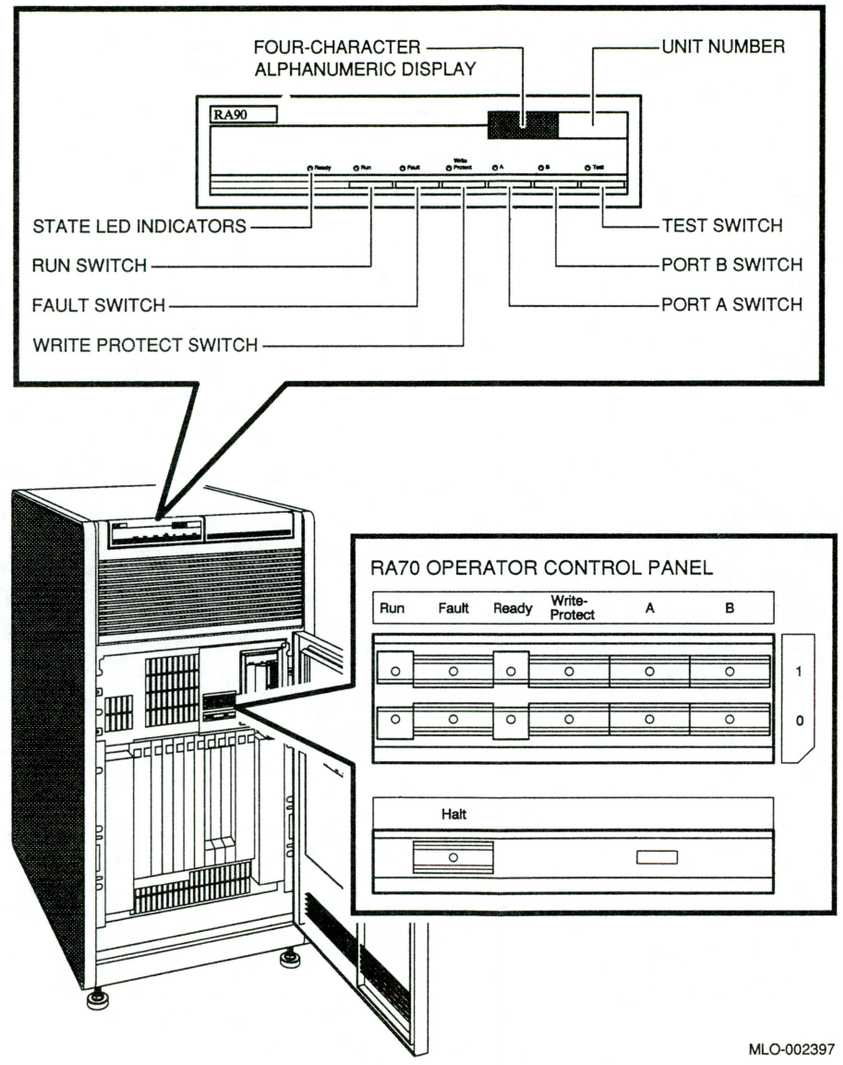
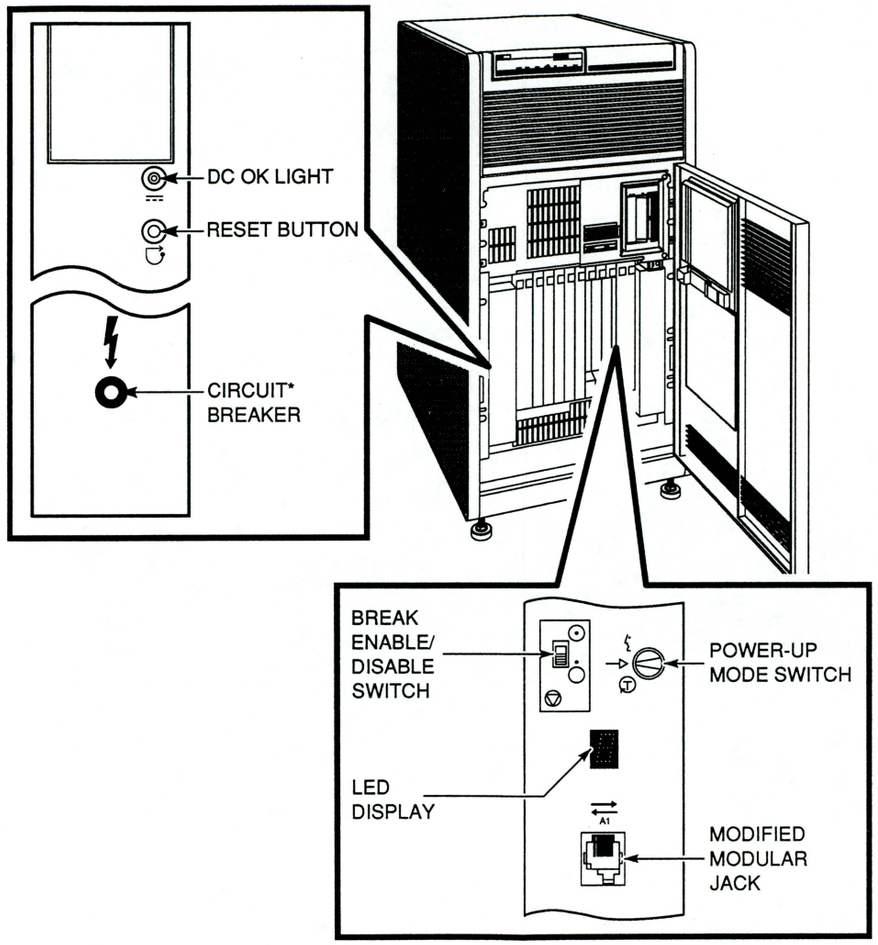


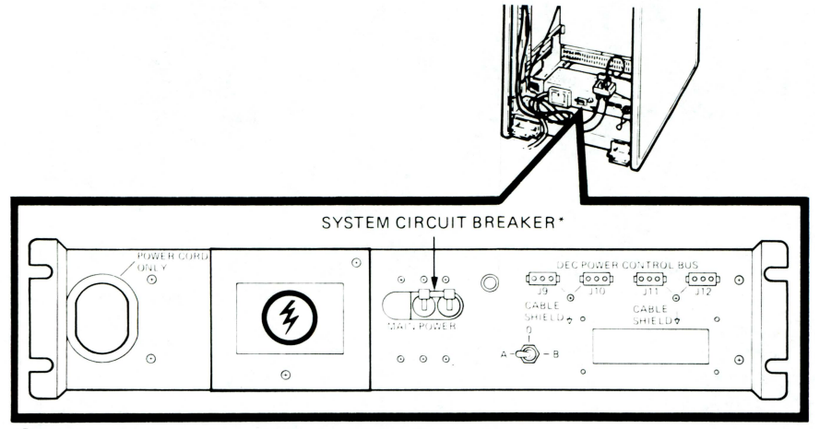
Figure A–12: MicroVAX 3900 Controls and Indicators, Bottom Front View



*Reset ciruit breaker by pushing it in.

MLO-002398

Figure A–13: MicroVAX 3900 Controls and Indicators, Rear View



*Reset the circuit breaker by pushing it down and then lifting it to the up position.

MLO-000442

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