MicroVAX 3100 Model 90

Troubleshooting and Diagnostic Information

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This manual describes the troubleshooting procedures and diagnostic commands that you can use to solve basic problems with the MicroVAX 3100 Model 90 system.

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Preface

This manual describes the troubleshooting procedures and diagnostic commands that you can use to solve basic problems with the MicroVAX™ 3100 Model 90 system.

Audience

This manual is intended for people who have some experience with computers.

Structure of This Manual

This manual has one chapter and an index.

Additional Information

See the *MicroVAX 3100 Model 90 Operator Information* manual for the list of associated and related documents.

Conventions

The following conventions are used in this manual:

Convention	Description
MONOSPACE	Text displayed on the screen is shown in monospace type.
italic type	Italic type emphasizes important information and indicates the complete titles of manuals.
boldface type	Boldface type in examples indicates user input. Boldface type in text indicates the first instance of terms defined in the text.
Note	A note contains information that is of special importance to the user.
Warning	A warning contains information to prevent personal injury.

1

Troubleshooting and Diagnosing Problems

This chapter describes the troubleshooting procedures and diagnostic commands that you can use to solve basic problems with the MicroVAX 3100 Model 90 system. It contains information on the following:

- Troubleshooting
- Diagnostic tests and commands
- Contacting Digital™ Services

It also lists the information that you must give to your Digital Services representative and where to find this information.

1.1 Troubleshooting

If a problem occurs, you must first make sure that all the cables, loopback connectors, and terminators are correctly connected and that the connectors are not damaged, for example, the pins may be broken or short-circuited.

Follow these steps:

1. Shut down the operating system following the procedures described in the operating system documentation.
2. Turn off the console terminal and all the peripheral devices, such as printers and modems.
3. Turn off all the expansion boxes.
4. Turn off the system unit.
5. Check that the following cables, if installed, are correctly connected at both ends and that the connectors are not damaged:
   - Console terminal cable (linking the console terminal to the system unit)
   - Console terminal power cord
   - System unit power cord

- Expansion box SCSI cables
- Expansion box power cords
- ThinWire™ Ethernet cable or standard Ethernet cable

6. Check that the following terminators, if installed, are correctly connected and are not damaged:
   - SCSI terminators
   - ThinWire Ethernet terminator (T-connector and two terminators)
   - Standard Ethernet loopback connector

   If you have correctly followed steps 1 to 5, the on/off switches on all the components are set to the off (O) position, and you have solved any problems caused by incorrectly connected cables or terminators.
7. Set the on/off switches on the following equipment to the on (|) position in the following order:
   a. Expansion boxes
   b. Peripherals
   c. Console terminal
   d. System unit

The system responds with the power-up test display. If it does not, see Section 1.2.

1.2 Using the Troubleshooting Table

Table 1–1 suggests the corrective actions for certain system problems. If you have a problem with the system, follow these steps:

1. Write down the symptoms of the problem.
2. Check the Symptom column in Table 1–1 for a match.
3. Check the causes of the symptom in the Possible Cause column. If the column lists more than one possible cause, check the possible causes and their suggested solutions in the order listed.
4. Follow the advice in the Suggested Solution column.
5. See Section 1.4 if the problem persists.

Table 1–1 Basic Troubleshooting

Symptom	Possible Cause	Suggested Solution
System Problems		
The system unit fan is off or the power light is off.	The power cord is not connected. The power cord may be faulty. The power socket may not be working. The system breaker or wall outlet may have blown.	Make sure that all the power cords are connected correctly at both ends. Try a known good power cord or test the power socket with an appliance that works.
	The overload protection circuitry of the power supply may have shut down because of an abnormal condition on the power line.	Turn the system off and then turn it back on.
	The power supply unit (PSU) is faulty.	Contact your Digital Services representative.
The power-up display does not show after 20 seconds.	The terminal cable is not correctly connected.	Make sure that all the cables are connected at both ends.
	The terminal cable is not connected to the correct MMJ port.	Check the MMJ port to which the terminal cable is connected. If this port is not MMJ port 3, remove the terminal cable and connect it to MMJ port 3.
	The power cord is not connected. The power cord may be faulty. The wall outlet may not be working.	Make sure that all the power cords are connected correctly at both ends. Try a known good power cord or test the power socket with an appliance that works.
	The terminal fuse may have blown.	Replace the blown terminal fuse. See the terminal documentation.
	The terminal settings may be incorrect.	See the *MicroVAX 3100 Model 90 Operator Information* manual for the list of correct terminal settings. See the terminal documentation for information on how to set up the terminal.

(continued on next page)

Table 1–1 (Cont.) Basic Troubleshooting

Symptom	Possible Cause	Suggested Solution
System Problems		
	The port to which the terminal connects may be faulty.	Try connecting the terminal to another system. If this solution works, the port to which the terminal was connected is faulty. If the terminal still does not operate, it is faulty. In either case, contact your Digital Services representative.
	The terminal cable may be faulty.	Connect the terminal cable and the terminal to another system. If the connected terminal works, the DZ circuitry or MMJ connector is faulty. Otherwise, the cable is faulty. Contact your Digital Services representative.
The power-up display contains question marks.	A diagnostic error has occurred.	See Section 1.4.
The power-up test display contains unexpected characters.	The terminal settings are incorrect or the DZ circuitry is faulty.	Make sure the terminal settings are correct, then run the power-up test again. If the terminal is set correctly, contact your Digital Services representative.
The system fails to boot the operating system.	The system defaults are incorrectly set.	Set the system defaults as described in the *OpenVMS Factory Installed Software User Information* document, then try to boot the system again. If the system still fails to boot, contact your Digital Services representative.

(continued on next page)

Table 1–1 (Cont.) Basic Troubleshooting

Symptom	Possible Cause	Suggested Solution
RRD42 Compact Disc Drive Problems		
The drive does not accept the caddy.	The disc is upside-down in the caddy or it is not placed correctly in the caddy.	Remove the disc from the caddy and reinsert it properly.
	A caddy is already present.	Eject the caddy and replace it with a new one.
The eject button fails to eject the caddy.	The eject button is disabled by software.	Reenable the eject button or manually eject the caddy.
	The system does not have power.	Set the system unit on/off switch to the on (|) position and press the eject button again.
	The RRD42 compact disc drive is faulty.	If you want to eject the caddy manually, see *MicroVAX 3100 Model 90 Operator Information* for instructions. If the problem persists, contact your Digital services representative.

(continued on next page)

Table 1–1 (Cont.) Basic Troubleshooting

Symptom	Possible Cause	Suggested Solution
TZ30 Tape Drive Problems		
The TZ30 green LED flashes rapidly.	The drive mechanism is faulty or the tape cartridge is damaged.	Press and release the unload button to clear the fault. If the LED continues to flash, do not try to remove the tape cartridge or use the tape drive. Contact your Digital Services representative.
The TZ30 does not operate.	The drive does not contain a tape cartridge.	Insert the tape cartridge and slide the lever from the UNLOCK to the LOCK position.
The operate lever does not slide.	The tape cartridge is in use.	Wait for the green LED to turn on and try again. If the problem persists, do not use the drive. Contact your Digital Services representative.
The operate lever does not lock.	The tape cartridge is not inserted correctly.	Reinsert the tape cartridge. If the problem persists, contact your Digital Services representative.
The tape does not load.		Press and release the unload button. Wait for the green LED to turn on before sliding the lever and removing the tape. If the LED flashes, contact your Digital Services representative.
The system cannot write to the tape.	The write-protect switch is in the write-protect position.	If the write-protect LED is on, remove the tape, reset the switch and try writing to the tape again. If the problem persists, contact your Digital Services representative.
The data read from the tape cartridge is corrupted.	The tape drive head may be dirty.	See the *MicroVAX 3100 Model 90 Operator Information* manual for information on how to clean the drive head.
The tape does not eject.	The tape is not rewound. The operate lever is in the lock position.	Follow the procedure for removing a tape from the TZ30 described in the *MicroVAX 3100 Model 90 Operator Information* manual.

(continued on next page)

Table 1–1 (Cont.) Basic Troubleshooting

Symptom	Possible Cause	Suggested Solution
TLZ06 Cassette Tape Drive Problems		
The system cannot write to the cassette tape.	The write-protect switch is in the write-protect position.	If the write-protect LED is on, remove the tape, reset the switch and try writing to the tape again. If the problem persists, contact your Digital Services representative.
	The cassette tape is not loaded.	Load the cassette tape.
The write-protect LED flashes.	The tape drive heads are dirty or the tape is worn.	Clean the drive heads (see the *MicroVAX 3100 Model 90 Operator Information* manual). If the problem persists, use a new tape.
The data read from the cassette tape is corrupted.	The tape drive heads may be dirty.	See the *MicroVAX 3100 Model 90 Operator Information* manual for information on how to clean the drive heads.
TZK10/TZK11 Quarter Inch Cartridge (QIC) Tape Drive Problems		
The data read from the QIC tape is corrupted.	The drive head is dirty.	Clean the drive head. See the *MicroVAX 3100 Model 90 Operator Information* manual.
The system cannot write to the QIC tape.	The write-protect switch is in the write-protect position.	Remove the QIC tape, reset the switch and try to write to the QIC tape again. If the problem persists, contact your Digital Services representative.
The system cannot read from or write to the QIC tape.	The QIC tape may be faulty.	Remove the QIC tape. If the amber LED turns off when you remove the QIC tape, the tape is probably faulty. Try a different QIC tape. If the amber LED stays on or if the problem persists, contact your Digital Services representative.

(continued on next page)

Table 1–1 (Cont.) Basic Troubleshooting

Symptom	Possible Cause	Suggested Solution
RX™26 Diskette Drive Problems		
The system cannot read from or write to the diskette.	The diskette is not formatted.	Format the diskette.
	The diskette is not correctly inserted.	Eject the diskette. Try to insert the diskette again.
	The diskette is faulty.	Try a different diskette.
	The diskette drive is faulty.	Contact your Digital Services representative.
	The diskette density is incorrect.	The RX26 accepts only high-density (HD) or extra-density (ED) diskettes.
	The diskette drive head may be dirty.	See the *MicroVAX 3100 Model 90 Operator Information* manual for information on how to clean the diskette drive head.
The system can read from but cannot write to a diskette.	The write-protect switch is in the write-protect position.	Eject the diskette and reset the switch. Try writing to the diskette again.
The diskette does not eject.	The diskette is incorrectly positioned in the drive.	Gently press the diskette with your finger and reposition it. Press the eject button again.
RZ-Series SCSI Disk Drive Problems		
An installed drive does not work.	Two SCSI identifiers are set to the same number.	Reset each SCSI ID to a unique number.
	Drive cables not properly connected.	Check the cable connections.
The Configuration display does not show a SCSI device.	SCSI device is not properly terminated.	Check for a SCSI 50-pin terminator.
	Two SCSI identifiers are set to the same number.	Reset each SCSI ID to a unique number.

1.3 Diagnostic Tests and Commands

There are a number of diagnostic tests and commands that can help you to isolate a problem with the system unit. These tests and commands are as follows:

- Power-up tests
- Diagnostic tests and utilities[1]
- Configuration display[1]
- Error display[1]

The following sections describe these tests and commands.

[1] You can use these tests and commands in privileged console mode only if the console security feature is enabled and the password is set. See the *MicroVAX 3100 Model 90 Customer Technical Information* manual for information on the console security feature.

1.3.1 Power-Up Tests

The system runs the power-up tests each time you turn on the system. After successful completion of tests, the system will either enter Console mode or proceed to automatic bootstrap, depending on the HALT action selected by the user. If HALT action is Default, Halt, or Restart, then the system enters console mode. If HALT action is Reboot or Restart_reboot, then the system proceeds to boot. The following example shows a typical display for a system that passes all tests and then enters console mode.

Figure 1–1 Successful Power-Up Test Display

```
KA50-A V2.3, VMB 2.14  ❶
Performing normal system tests.
74..73..72..71..70..69..68..67..66..65..64..63..62..61..60..59..
58..57..56..55..54..53..52..51..50..49..48..47..46..45..44..43..  ❷
42..41..40..39..38..37..36..35..34..33..32..31..30..29..28..27..
26..25..24..23..22..21..20..19..18..17..16..15..14..13..12..11..
10..09..08..07..06..05..04..03..
Tests completed.  ❸
>>>  ❹
```

❶ Central Processing Unit (CPU) Name, Firmware Version Number, and Virtual Memory Boot (VMB) Version Number

❷ Read-Only Memory (ROM) Based Diagnostics Countdown

❸ Status Message

❹ Console Prompt

The following example shows a typical display for a system that passes all tests and then enters automatic bootstrap.

```
KA50-A V2.3, VMB 2.14
Performing normal system tests.
74..73..72..71..70..69..68..67..66..65..64..63..62..61..60..59..
58..57..56..55..54..53..52..51..50..49..48..47..46..45..44..43..
42..41..40..39..38..37..36..35..34..33..32..31..30..29..28..27..
26..25..24..23..22..21..20..19..18..17..16..15..14..13..12..11..
10..09..08..07..06..05..04..03..
Tests completed.
Loading system software.
(BOOT/R5:0 EZA0)

  2..
-EZA0
1..0..
```

Note

The operating system messages start here, i.e. VMS .....

If the power-up tests encounter an error, one of the following actions occurs:

For minor errors:

- If HALT action is set to a boot condition (that is reboot or restart_reboot), and if a minor error occurs, the system displays an abbreviated error message and continues to boot as normal.
- If HALT action is set to Default, Halt or Restart, then the system enters console mode.
- The only errors defined as minor are errors in memory that cause pages to be marked bad in the memory bitmap. There must be enough good memory left to allow an attempt to bootstrap.

For severe errors:

- The system always enters console mode regardless of HALT action after it attempts to complete all tests possible.

The following example shows a system with a memory error that only affected one set of memory out of two sets. Because some memory is still usable, the system proceeds to automatic bootstrap if the HALT action is set to a boot condition.

```
KA50-A V2.3, VMB 2.14
Performing normal system tests.
74..73..72..71..70..69..68..67..66..65..64..63..62..61..60..59..
58..57..56..55..54..53..52..51..50..49..48..47..46..45..44..43..
42..41..40..39..38..37..36..35..34..33..32..

? Test_Subtest_40_06  Loop_Subtest=00  Err_Type=FF   DE_Memory_count_pages.lis

31..30..29..28..27..26..25..24..23..22..21..20..19..18..17..16..
15..14..13..12..11..10..09..08..07..06..05..04..03..

16 MB RAM, SIMM Set (0A,0B,0C,0D) present
Memory Set 0: 04000000 to 04FFFFFF, 16MB, 0 good pages, 32768 bad pages

64 MB RAM, SIMM Set (1E,1F,1G,1H) present
Memory Set 1: 00000000 to 03FFFFFF, 64MB, 131072 good pages, 0 bad pages

Total of 80MB, 131072 good pages, 32768 bad pages, 136 reserved pages
```

```
Tests completed.
Loading system software.
(BOOT/R5:0 EZA0)
  2..
-EZA0
1..0..
❶
? Test_Subtest_40_06  Loop_Subtest=00  Err_Type=FF   DE_Memory_count_pages.lis ❷

16 MB RAM, SIMM Set (0A,0B,0C,0D) present
Memory Set 0: 04000000 to 04FFFFFF, 16MB, 0 good pages, 32768 bad pages

64 MB RAM, SIMM Set (1E,1F,1G,1H) present
Memory Set 1: 00000000 to 03FFFFFF, 64MB, 131072 good pages, 0 bad pages

Total of 80MB, 131072 good pages, 32768 bad pages, 136 reserved pages
```

❶ Operating system messages start here; i.e. VMS .....

❷ Abbreviated error message for memory error

Memory errors normally cause the results of a SHOW MEMORY display to occur after the tests are completed and before continuing. SHOW MEMORY is the most useful command to determine which memory SIMMs are bad when memory errors occur.

1.3.2 Diagnostic Tests and Utilities

The diagnostic tests and utilities are similar to the power-up tests except that the power-up tests enable you to test all the devices in the system, whereas the diagnostic tests and utilities enable you to test single devices and the functions of single devices.

Figure 1–2 shows a list of diagnostic tests obtained by entering the following command:

```
>>> T 9E
```

Figure 1–2 Diagnostic Tests

```
Test
#   Address   Name               Parameters
_____________________________________________________________________________
    20052200  SCB
    20055850  De_executive
30  2006A53C  Memory_Init_Bitmap *** mark_Hard_SBEs ******
31  2006AB34  Memory_Setup_CSRs  *********
32  2005D148  NMC_registers      **********
33  2005D324  NMC_powerup        **
34  2005E6D8  SSC_ROM            ***
35  2005FB90  B_Cache_diag_mode  bypass_test_mask *********
37  20061590  Cache_w_Memory     bypass_test_mask *********
40  2006B5E0  Memory_count_pages SIMM_set0 SIMM_set1 Soft_errs_allowed *****
41  20068CEC  Board_Reset        *
42  20061880  Chk_for_Interrupts **********
46  200610C4  P_Cache_diag_mode  bypass_test_mask *********
47  2006AD04  Memory_Refresh     start_a end incr cont_on_err time_seconds *****
48  2006B028  Memory_Addr_shorts start_add end_add * cont_on_err pat2 pat3 ****
4A  2006A23C  Memory_ECC_SBEs    start_add end_add add_incr cont_on_err ******
4B  2006940C  Memory_Byte_Errors start_add end_add add_incr cont_on_err ******
4C  20069BA0  Memory_ECC_Logic   start_add end_add add_incr cont_on_err ******
4D  20068FE8  Memory_Address     start_add end_add add_incr cont_on_err ******
4E  20069188  Memory_Byte        start_add end_add add_incr cont_on_err ******
4F  2006B7F4  Memory_Data        start_add end_add add_incr cont_on_err ******
51  2005803C  FPA                **********
52  20058530  SSC_Prog_timers    which_timer wait_time_us ***
53  20058818  SSC_TOY_Clock      repeat_test_250ms_ea Tolerance ***
54  20057C18  Virtual_Mode       ********
55  20058E6C  Interval_Timer     *****
56  2006507C  SHAC_LPBCK         From_bus To_bus passes *******
58  20065D24  SHAC_RESET         dssi_bus port_number time_secs not_pres *
59  20062778  SGEC_LPBCK_ASSIST  time_secs **
```

(continued on next page)

Figure 1–2 (Cont.) Diagnostic Tests

```
5C  20062D10  SHAC               SHAC_number *********
5F  200619B8  SGEC               loopback_type no_ram_tests ******
62  20058B1C  console_QDSS       mark_not_present selftest_r0 selftest_r1 *****
63  20058CA4  QDSS_any           input_csr selftest_r0 selftest_r1 ******
80  2005D3C0  CQBIC_memory       bypass_test_mask *********
81  200596CC  Qbus_MSCP          IP_csr ******
82  200598AC  Qbus_DELQA         device_num_addr ****
83  2005A85C  QZA_Intlpbck1      controller_number ********
84  2005BF1C  QZA_Intlpbck2      controller_number *********
85  20059A9C  QZA_memory         incr test_pattern controller_number *******
86  20059F44  QZA_DMA            Controller_number main_mem_buf ********
90  20058494  CQBIC_registers    *
91  20058410  CQBIC_powerup      **
99  2005DC4C  Flush_Ena_Caches   dis_flush_VIC dis_flush_BC dis_flush_PC
9A  20063FB0  INTERACTION        pass_count disable_device *******
9B  20068E48  Init_memory        **
9C  2006631C  List_CPU_registers *
9D  2006C250  Utility            Flags *********
9E  2005903C  List_diagnostics   script_number *
9F  200681CC  Create_A0_Script   **********
C1  20057888  SSC_RAM_Data       *
C2  20057A78  SSC_RAM_Data_Addr  *
C5  200589E8  SSC_registers      *
D0  20060C70  V_Cache_diag_mode  bypass_test_mask *********
D2  2005DE90  O_Bit_diag_mode    bypass_test_mask *********
DA  2006139C  PB_Flush_Cache     **********
DB  2005E850  Speed              print_speed *********
DC  2006C060  NO_Memory_present  *
DD  2005F0DC  B_Cache_Data_debug start_add end_add add_incr *******
DE  2005EC64  B_Cache_Tag_Debug  start_add end_add add_incr *******
DF  2005E2A8  O_BIT_DEBUG        start_add end_add add_incr seg_incr ******
E0  2006D4D4  SCSI               environment reset_bus time_s *******
E1  2006D7CC  SCSI_Utility       environment util_nbr target_ID lun ******
E2  2006DA2C  SCSI_MAP           bypass_test addr_incr_data_tst ********
E4  2006DFC8  DZ                 environment *********
E8  2006E1DC  SYNC               environment *********
E9  2006E2B4  SYNC_Utility       environment *********
EC  2006E398  ASYNC              environment *********
F0  2006D638  SCSI_option        environment reset_bus time_s *******
F1  2006D900  SCSI_Opt_Utility   environment util_nbr target_ID lun ******
F2  2006DA40  SCSI_MAP_Option    bypass_test addr_incr_data_tst ********

Scripts
#   Description
```

(continued on next page)

Figure 1–2 (Cont.) Diagnostic Tests

```
A0  User defined scripts
A1  Powerup tests, Functional Verify, continue on error, numeric countdown
A3  Functional Verify, stop on error, test # announcements
A4  Loop on A3 Functional Verify
A6  Memory tests, mark only multiple bit errors
A7  Memory tests
A8  Memory acceptance tests, mark single and multi-bit errors, call A7
A9  Memory tests, stop on error
B2  Extended tests plus BF, then loop
B5  Extended tests, then loop
BF  DZ, SYNC, ASYNC with loopbacks

Load & start system exerciser
100 Customer mode, 2 passes
101 CSSE mode, 2 passes
102 CSSE mode, continous until ^C
103 Manuf mode, continous until ^C
104 Manuf TINA mode, continous until ^C
105 Manuf mode, 2 passes
106 CSSE mode, select tests, continous until ^C
107 Manuf mode, select tests, continous until ^C
```

Note

Tests 101 through 107 are reserved for use by Digital Services.

The tests and utilities shown in Table 1–2 are for option cards which may or may not be present, depending upon the options you ordered.

Table 1–2 Option Card Tests

Test No.	Name	Usage
E8	SYNC	Synchronous COMM option card (DSW41/42)
E9	SYNC_Utility	Synchronous COMM option card (DSW41/42)
EC	ASYNC	Asynchronous option card (DHW41/42)
F0	SCSI_option	SCSI option card for 2nd SCSI bus B (KZDDA)
F1	SCSI_Opt_ Utility	SCSI option card for 2nd SCSI bus B (KZDDA)
F2	SCSI_MAP_ Option	SCSI option card for 2nd SCSI bus B (KZDDA)

Note

The following available tests are not used on the MicroVAX 3100 Model 90; they are used only on the MicroVAX 4000 Model 100A, and are listed here to avoid confusion when you see them in the diagnostic test listing (Figure 1–2).

Table 1–3 MicroVAX 4000-100A Tests

Test No.	Name	Usage
56	SHAC_LPBCK	Not used on 3100, SHAC option only
58	SHAC_RESET	Not used on 3100, SHAC option only
5C	SHAC	Not used on 3100, SHAC option only
62	console_QDSS	Not used on 3100, QBUS systems only
63	QDSS_any	Not used on 3100, QBUS systems only
81	Qbus_MSCP	Not used on 3100, QBUS systems only
82	Qbus_DELQA	Not used on 3100, QBUS systems only
83	QZA_Intlpbck1	Not used on 3100, QBUS systems only
84	QZA_Intlpbck2	Not used on 3100, QBUS systems only
85	QZA_memory	Not used on 3100, QBUS systems only
86	QZA_DMA	Not used on 3100, QBUS systems only

To run the diagnostic tests, enter either TEST or T followed by the test number.

You can specify optional parameters for some tests, but you would not do so normally. If you decide to specify optional parameters, then the following conditions apply:

- Each test uses up to 10 parameters, no more than 7 may be inputted on command line.

  Most of these parameters are assigned values automatically by the system. These parameters are indicated by an asterisk (*) in the parameters column of Figure 1–2.

- If a parameter can be assigned a value, the name of the parameter is shown in the parameters column in Figure 1–2.

You can use test 9E with the test number as a parameter to show a list of legal parameters and valid values for the test number. For example, enter T 9E 30 to show a list of legal parameters and valid values for test number 30 (Memory_Init_Bitmap).

- There is a dependency between some tests.
- Failures can occur if dependencies between tests are not followed.
- Any parameter not entered is given a default value. Enter T 9E nn, where nn is test number to show defaults. During power-up testing or execution of any script of tests (A0 to BF), the values of parameters are determined by the script, not defaults.
- You may dump the contents of a script by entering T 9E nn, where nn is a script to dump. Scripts are always in range of A0 to BF (or 0 for the power-up script).

You must enter three zeros (0) as place holders for the three parameters that occur before the user-specified parameter, mark_hard_SBEs. The last value (1) is a parameter. You can then specify the mark_hard_SBEs parameter in the Memory_Init_Bitmap test as follows:

```
>>> T 30 0 0 0 1
```

The resulting messages differ, depending on the function of the test or utility. However, most failing tests cause the system to display error messages similar to the following:

```
>>> T 5F 1

? Test_Subtest_5F_18  Loop_Subtest=0E  Err_Type=FF   DE_SGEC.lis
Vec=010C  Prev_Errs=0000   P1=00000001   P2=00000000   P3=827DFF03  P4=00000000
P5=00000000  P6=00000000   P7=00000000   P8=00000001   P9=00000000 P10=00000000
r0=00000054  r1=000082E2   r2=00000001   r3=000082FA   r4=00008230  r5=00000040
r6=000082E2  r7=20008000   r8=00008000   r9=20140758  r10=13000001 r11=2014044B
 EPC=2005721A dser=0000 cesr=00000000 icsr=01 pcsts=F800 pcctl=FC13
 cctl=00000007 bcetsts=03A0 bcedsts=0400 cefsts=00019200 nests=00
 mmcdsr=00C6C600 mesr=00006000

>>>
```

Write down the error messages before you contact your Digital Services representative.

1.3.3 Power-Up Error Messages

The following are examples of some error messages at power-up.

Example 1

This is a typical example of a failed test. In this case, test E8 failed testing a SYNC (COMM) option.

```
KA50-A V2.3, VMB 2.14
Performing normal system tests.
74..73..72..71..70..69..68..67..66..65..64..63..62..61..60..59..
58..57..56..55..54..53..52..51..50..49..48..47..46..45..44..43..
42..41..40..39..38..37..36..35..34..33..32..31..30..29..28..27..
26..25..24..23..22..21..20..19..18..17..16..15..14..13..12..11..
10..09..

? Test_Subtest_E8_03  Loop_Subtest=00  Err_Type=FF   DE_SYNC.lis
Vec=0000  Prev_Errs=0001   P1=09000001   P2=00000000   P3=00000000  P4=00000000
P5=00000000  P6=00000000   P7=00000000   P8=00000000   P9=00000000 P10=00000000
Stat=0112  FRU=20 LED=00  Ext_Stat 00090014 00EE001D 00020002 0000EFCE 00000000
 20040000 7FDEDFFF 00000000
 dser=0000 cesr=00000000 intmsk=00 icsr=01 pcsts=F800 pcctl=FC13 cctl=00000021
 bcetsts=0000 bcedsts=0000 cefsts=00019220 nests=00 mmcdsr=01111000
 mesr=00006000

08..07..06..05..04..03..

Normal operation not possible.
>>>
```

Example 2

This example represents a case where an additional set of memory SIMMs was added and one of the four SIMMs for the set was not the same type of SIMM as the others. In this example SIMM 1H was either not installed or incorrectly installed.

```
KA50-A V2.3, VMB 2.14
Performing normal system tests.
74..73..72..71..70..69..68..67..66..65..64..63..62..61..60..59..

? Test_Subtest_31_05  Loop_Subtest=00  Err_Type=FF   DE_Memory_Setup_CSRs.lis
Vec=0000  Prev_Errs=0000   P1=00000000   P2=01000000   P3=00000001  P4=00010000
P5=2101801C  P6=00000007   P7=80000003   P8=0000CF4A   P9=00000001 P10=2006B8D8
r0=00000002  r1=21018000   r2=00000008   r3=81000000   r4=00000001  r5=01000000
r6=2006EB77  r7=21018048   r8=00000000   r9=20140758  r10=00000000 r11=FFFFFFFF
 dser=0000 cesr=00000000 intmsk=00 icsr=01 pcsts=FA00 pcadr=FFFFFFF8 pcctl=FC13
 cctl=00000020 bcetsts=0360 bcedsts=0F00 cefsts=00019200 nests=00
 mmcdsr=01FE6600 mesr=00000000
```

```
58..57..56..55..54..53..52..51..50..49..48..47..46..45..44..43..
42..41..40..39..38..37..36..35..34..33..32..31..30..29..28..27..
26..25..24..23..22..21..20..19..18..17..16..15..14..13..12..11..
10..09..08..07..06..05..04..03..

16 MB RAM, SIMM Set (0A,0B,0C,0D) present
Memory Set 0: 00000000 to 00FFFFFF, 16MB, 32768 good pages, 0 bad pages

Error:  SIMM Set 1 (1E,1F,1G,1H)                                    ❶
 SIMM_1E = 64MB      SIMM_1F = 64MB      SIMM_1G = 64MB      SIMM_1H = 00MB ??

Total of 16MB, 32768 good pages, 0 bad pages, 104 reserved pages

Normal operation not possible.
```

❶ Indicates no memory SIMM installed here or SIMM not correctly installed.

Example 3

This example represents a case where one SIMM of a set was bad. In this example, SIMM 1G was bad or incorrectly installed.

```
KA50-A V2.3, VMB 2.14
Performing normal system tests.
74..73..72..71..70..69..68..67..66..65..64..63..62..61..60..59..
58..57..56..55..54..53..52..51..50..49..48..47..46..45..44..43..
42..41..40..39..38..37..36..35..34..33..32..

? Test_Subtest_40_06  Loop_Subtest=00  Err_Type=FF   DE_Memory_count_pages.lis

31..30..29..28..27..26..25..24..23..22..21..20..19..18..17..16..
15..14..13..12..11..10..09..08..07..06..05..04..03..

16 MB RAM, SIMM Set (0A,0B,0C,0D) present
Memory Set 0: 04000000 to 04FFFFFF, 16MB, 32768 good pages, 0 bad pages

Error:  SIMM Set 1 (1E,1F,1G,1H)
 SIMM_1E = 64MB      SIMM_1F = 64MB      SIMM_1G = 64MB ??   SIMM_1H = 64MB
Memory Set 1: 00000000 to 03FFFFFF, 64MB, 0 good pages, 131072 bad pages

Total of 80MB, 32768 good pages, 131072 bad pages, 136 reserved pages

Tests completed.
```

Example 4

This example represents a case where one SIMM of a set is missing or incorrectly installed. In this case, only one set of SIMMs was installed. Since one was missing, there is no usable memory for testing to run to completion. SIMM 1D is missing here.

```
KA50-A V2.3, VMB 2.14
Performing normal system tests.
74..73..72..71..70..69..68..67..66..65..64..63..62..61..60..

? Test_Subtest_DC_87  Loop_Subtest=00  Err_Type=FF   DE_NO_Memory_present.lis
Vec=0000  Prev_Errs=0000   P1=EF42EF42   P2=00000000   P3=00000000  P4=00000000
P5=00000000  P6=7F337F7F   P7=00000000   P8=0000EF42   P9=00000001 P10=2006B8D8
r0=00000002  r1=21018000   r2=00000008   r3=00000007   r4=03FFFFE0  r5=80000000
r6=FFFFFFFF  r7=00000000   r8=00000000   r9=20140758  r10=FFFFFFFE r11=FFFFFFFF
 dser=0000 cesr=00000000 intmsk=00 icsr=01 pcsts=FA00 pcadr=FFFFFFF8 pcctl=FC13
 cctl=00000020 bcetsts=0360 bcedsts=0F00 cefsts=00019200 nests=00
 mmcdsr=00666640 mesr=00000000

Error:  SIMM Set 0 (0A,0B,0C,0D)
 SIMM_0A = 16MB      SIMM_0B = 16MB      SIMM_0C = 16MB      SIMM_0D = 00MB ??

Total of 0MB, 0 good pages, 0 bad pages, 0 reserved pages
Normal operation not possible.
```

1.3.4 Configuration Display

The configuration display shows the system configuration and the error messages that were detected while the most recent power-up tests, diagnostic tests, and utilities were running. If you add expansion boxes to the system and do not run the power-up tests or appropriate diagnostic test or utility, the configuration display does not recognize the reconfiguration. Enter the following command to see the configuration display:

```
>>> SHOW CONFIG
```

If the system does not detect any errors in the most recent power-up tests or diagnostic utilities, it responds with a configuration display similar to the following:

```
KA50-A V2.3, VMB 2.14
08-00-2B-33-CF-C9
80MB
  ❶      ❷         ❸
TstNbr  DevNam      Info
------  --------    -------------------------
     0    CPU_BD    OK
    A8       MEM    OK
    E4        DZ    OK
    E0      SCSI    OK
                    3-RZ24L   6-Adapter  7-RRD42  ❹
    5F        NI    OK
    F0    SCSI_B    OK
                    0-RZ23L   6-Adapter
     0      QBUS    OK
    E8      COMM    OK
                    DSW41/42 2 CHANNEL V4.10-7b
    EC     ASYNC    OK
                    DHW41/2 V1.6
```

❶ Test Utility Number Column

❷ Device Mnemonic Column

❸ Device Status Column

❹ SCSI IDs and SCSI Device Names

The test numbers listed identify the normal test or script number to run to verify the device listed. There are additional tests and utilities for some devices. Test 0 calls the power-up script.

Note

The lines for F0, E8 and EC display only if the applicable option is present.

If the system detects errors in the most recent power-up tests and diagnostic utilities, it responds with a configuration display similar to the following:

```
KA50-A V2.3, VMB 2.14
08-00-2B-2B-16-91
80MB
TstNbr  DevNam      Info
------  --------    --------------------------
     0    CPU_BD    OK
    A8    MEMORY    OK
    E4        DZ    ?? 001 0048  ❶
    E0      SCSI    OK
                    3-RZ24L   6-Adapter 7-RRD42
    5F        NI    OK
    E8      COMM    OK
                    DSW41/42 2 CHANNEL V3.11-47
    EC     ASYNC    OK
                    DHW41/2 V1.6
>>>
```

❶ Error Information—Write down this information before you contact your Digital Services representative.

1.3.5 Error Display

You can use the error display to display certain errors detected during the last power-up test or diagnostic utility. To see the error display, enter the following command:

```
>>> SHOW ERROR
```

The system responds with a display similar to the following:

```
?? 001    CPU_BD  0000
         B_Cache  Test_35  Subtest_33  Loop_sub_27  Error_type_FF
            NVAX  Test_54  Subtest_00  Loop_sub_01  Error_type_FF

?? 001        DZ  0030
010 0001 00000031 00000020 00000000 00000002 00000000 0000F1F0
                  Test_E4  Subtest_02  Loop_sub_00  Error_type_FF

?? 020      COMM  0112
005 0014 001E001E 0F0F0311 01010002 00000000 0008001E 80000002 00000000
```

Write down this information before you contact your Digital Services representative.

1.4 Contacting Digital Services

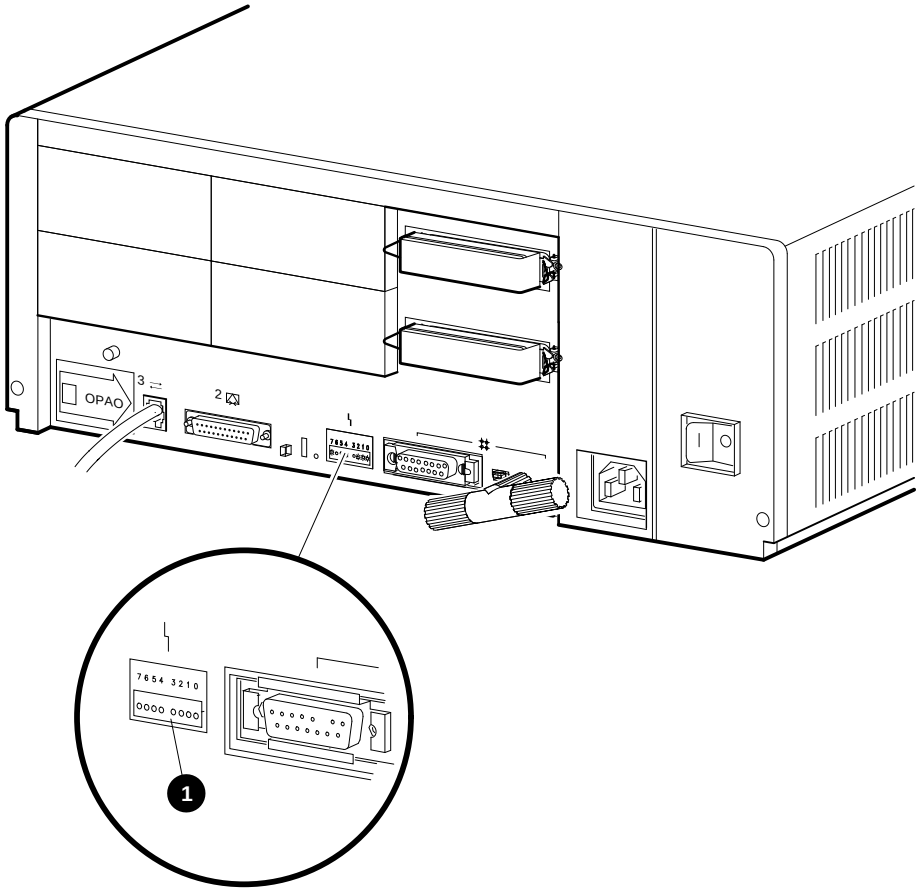
Warning

Only authorized service personnel should service the MicroVAX 3100 Model 90.

If you have followed the procedures in this chapter but the problem remains unsolved, your Digital Services representative can help you. Before you place your call, follow these steps:

1. Write down a description of the problem, including the error messages and the number of the tests or utilities that failed.
2. Look at the status LED display on the back of the system unit and write down the numbers of the LEDs that are lit (see Figure 1–3).
3. List the steps you took to correct the problem as well and their results.
4. Write down the serial and model numbers of the system unit and any connected peripheral devices. These numbers are usually printed on a label on the back of the device.

Figure 1–3 Status LED Display



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❶ Status LED Display

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