

# Software Product Description

PRODUCT NAME: VAX 9000 Series Diagnostic Set

SPD 32.22.03

## DESCRIPTION

VAX 9000 Series Diagnostic Set is a package of programs that allows users to maintain a VAX 9000 system. These diagnostics test all subsystems of the VAX 9000 system including the Power Control System, Service Processor System, CPU, Memory, I/O Adapters, and peripheral devices. The package includes firmware-based tests, service-processor-based tests, and macro-diagnostics.

### *Firmware-Based Components*

The firmware-based components are comprised of functional tests that are executed by microprocessors located on various subsystem modules. These tests provide fault detection and indicate the failing replaceable unit by illuminating a LED located on the failing unit. In addition, diagnostic messages may be displayed on the operator control panel or on the Service Processor console. These tests are executed automatically during system power-on or controlled by issuing commands from the Service Processor console.

The standard COBOL data type used in the data processing industry is known as a packed-decimal string. It was created to store data more efficiently on disk at a time when disks were much more expensive than they are today. Third-party vendors for the commercial market usually make their layered software execute instructions quickly using packed-decimal data types. Therefore, the packed-decimal performance of the VAX 9000 will be important for mainframe customers who run third-party commercial packages or have developed their own programs using the packed-decimal string instruction set in firmware.

On the VAXserver 9000 packages, Digital has offered a non-optimized version of the packed-decimal string instruction firmware. The Commercial Instruction Set (CIS) option may be added to the VAX 9000 server packages using the CIS Upgrades. Server systems that have the CIS Upgrade will have comparable COBOL packed-decimal string instruction performance to similarly-configured VAX 9000 mainframe systems.

### *Service-Processor-Based Components*

The Service Processor-based components are comprised of functional diagnostics and structural tests that use the VAX 9000 maintenance facilities such as SCAN and BIST. These tests verify the integrity of the CPU, memory, and I/O adapters. Some of these tests are executed automatically during system startup. All of these tests can be controlled by issuing commands on the Service Processor console. Failure reports from these diagnostics indicate the set of replaceable units that may be at fault. All failure reports are displayed on the Service Processor console.

### *Macrodiagnostic Components*

The Macrodiagnostic components provide fault detection and isolation within the VAX 9000 CPUs and standard options. Most macrodiagnostics are executed in conjunction with the VAX Diagnostic Supervisor (VAX DS).

The VAX Diagnostic Supervisor supplies diagnostic operator services (i.e., loading, starting, and control) as a stand-alone controller (non-VAX/VMS) or as a process under VAX/VMS.

The Macrodiagnostics consist of exercisers, functional-level, and logic-level tests that run under the control of VAX DS. Functional-level tests run in stand-alone mode or with VAX/VMS. Repair-level programs run only in stand-alone mode.

### VAX 9000 Diagnostic Program Levels

Level	Run-time Environment	Types of Programs
Level 2R	Runs under VAX DS in user mode only	Exercisers and functional tests of memory, peripheral devices
Level 2	Runs under VAX DS in user and stand-alone modes	Functional tests of CPU instruction set

Level	Run-time Environment	Types of Programs
Level 3	Runs under VAX DS in stand-alone mode only	Functional tests and logic tests of CPU and peripheral devices
Level 4	Runs in stand-alone mode without VAX DS	Functional and logic tests of CPU and CPU I/O adapters

**HARDWARE REQUIREMENTS**

Any valid VAX 9000 system configuration

**SOFTWARE REQUIREMENTS**

VMS Operating System V5.4 - V5.5 is recommended for optimum diagnostic capabilities.

**ORDERING INFORMATION**

VAX 9000-110 Diagnostic Single Use License:	QX-K23AF-AA
VAX 9000-110 Maintenance Diagnostic Media Kit:	QZ-K23AC-HW
VAX 9000-110 Maintenance Diagnostic Annual Updates:	QY-K23AC-AW
VAX 9000-210 Diagnostic Single Use License:	QX-K23AA-AA
VAX 9000-210 Maintenance Diagnostic Media Kit:	QZ-K23AA-HW
VAX 9000-210 Maintenance Diagnostic Annual Updates:	QY-K23AA-AW
VAX 9000-310 Diagnostic Single Use License:	QX-K23AG-AA
VAX 9000-310 Maintenance Diagnostic Media Kit:	QZ-K23AD-HW
VAX 9000-310 Maintenance Diagnostic Annual Updates:	QY-K23AD-AW
VAX 9000-320 Diagnostic Single Use License:	QX-K23AM-AA
VAX 9000-320 Maintenance Diagnostic Media Kit:	QZ-K23AD-HW
VAX 9000-320 Maintenance Diagnostic Annual Updates:	QY-K23AD-AW
VAX 9000-330 Diagnostic Single Use License:	QX-K23AN-AA
VAX 9000-330 Maintenance Diagnostic Media Kit:	QZ-K23AD-HW
VAX 9000-330 Maintenance Diagnostic Annual Updates:	QY-K23AD-AW

VAX 9000-340 Diagnostic Single Use License:	QX-K23AP-AA
VAX 9000-340 Maintenance Diagnostic Media Kit:	QZ-K23AD-HW
VAX 9000-340 Maintenance Diagnostic Annual Updates:	QY-K23AD-AW
VAX 9000-410 Diagnostic Single Use License:	QX-K23AB-AA
VAX 9000-410 Maintenance Diagnostic Media Kit:	QZ-K23AB-HW
VAX 9000-410 Maintenance Diagnostic Annual Updates:	QY-K23AB-AW
VAX 9000-420 Diagnostic Single Use License:	QX-K23AC-AA
VAX 9000-420 Maintenance Diagnostic Media Kit:	QZ-K23AB-HW
VAX 9000-420 Maintenance Diagnostic Annual Updates:	QY-K23AB-AW
VAX 9000-430 Diagnostic Single Use License:	QX-K23AD-AA
VAX 9000-430 Maintenance Diagnostic Media Kit:	QZ-K23AB-HW
VAX 9000-430 Maintenance Diagnostic Annual Updates:	QY-K23AB-AW
VAX 9000-440 Diagnostic Single Use License:	QX-K23AE-AA
VAX 9000-440 Maintenance Diagnostic Media Kit:	QZ-K23AB-HW
VAX 9000-440 Maintenance Diagnostic Annual Updates:	QY-K23AB-AW

Licensed users of VAX Diagnostics may order the Annual Subscription Update Service at the prevailing rate for such updates. The update is distributed in binary form on the appropriate medium and includes no installation or other services unless specifically stated.

*Maintenance Documentation Service (MDS) Microfiche Documentation Library*

MD-VAX Maintenance Documentation and Diagnostic Listings for VAX Systems (Library Only)

In general, each MDS Library includes:

Hardware Manuals, Illustrated Parts Breakdowns, Revision Matrix Preventive Maintenance Manuals, Diagnostic Listings, DEC-O-LOG (FCO Synopsis), and FCOs (Field Change Orders)

MD-VAX-01	Maintenance Documentation and Diagnostic Listings for VAX systems (Library Only, including updates)
MD-VAX-D1	Maintenance Documentation for VAX systems (Library Only, including updates)
MD-VAX-L1	Diagnostic Listings for VAX systems (Library Only, including updates), DEC-O-LOG on Microfiche
MD-MFDOL-R	Field Change Order Notification service for all systems (initial subscription includes one year of updates)

**SOFTWARE LICENSING**

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The single-use, end-user license is required for each CPU to be self-maintained.

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**DISTRIBUTION**

9-track 1600 BPI Magtape with TK50 tape cartridge and documentation

**SOFTWARE WARRANTY**

None

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