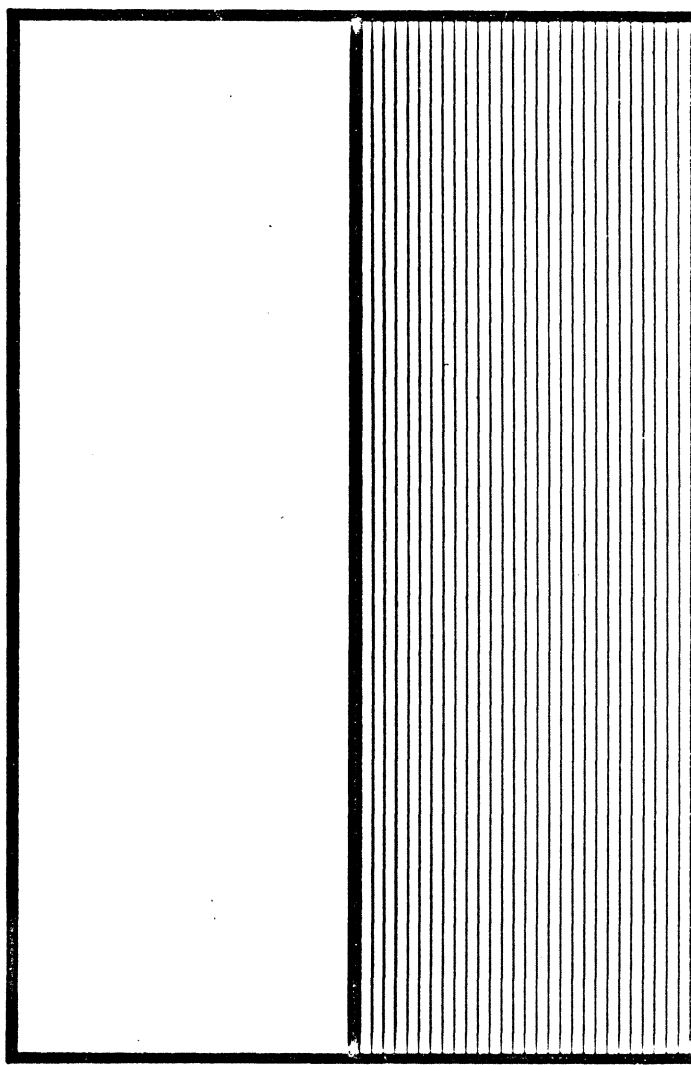


UNIVAC

9400 SYSTEM

PROGRAM DESCRIPTION DRAWING

CUSTOMER
ENGINEERING



 SPERRY RAND

 UNIVAC

DRAWING NO. 4091698

REVISION B

CUSTOMER ENGINEERING
PRODUCT DIAGNOSTIC SOFTWARE

9400 - 8484 Disc Read/Write Exerciser

SIGNATURE

TITLE

DATE

APPROVAL _____

APPROVAL _____

APPROVAL _____

APPROVAL _____

REVISION DESCRIPTION RECORD

4091698

REV	DESCRIPTION
B	Correct incorrect chain print out and update UD # to 002

REVISION STATISTICS RECORD

4091695

DWG REV	MSTR REV	RELEASE DATE	DESIGNER NAME	EIR NUMBER	FCO NUMBER
B	N		PDS Phila.	C12607	

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1. INTRODUCTION.

1.1 Purpose. This document describes a 9400 Maintenance test program for the 5024/8414 Disc Subsystem.

1.2 Major Objectives. The objective of this program is to write test data on all selected cylinders of an 8414 Disc Pack and to test the head positioning mechanism. Test organization and operator options are intended to satisfy the needs of Design, Quality Control and Field Engineering personnel in checkout, acceptance and maintenance activities.

1.3 Equipment Configurations. All equipment configurations must be connected to a Selector 1-0 channel of the 9400 processor. This test will operate the following equipment configuration:

- Disc File Control - Type 5024
- Disc Drive - Type 8414
- Disc Pack Assembly - Type F1214

1.4 Associated Software. This program has DSKII included as an integral part of the program. This is the standard disc handler routine used by all Disc Maintenance test programs. It is the interface between the program and MCR, which performs program load, parameterization, execution, deletion, I-O handling, and message handling.

1.5 Reference Documents.

<u>DRAWING</u>	<u>REVISION</u>	<u>DESCRIPTION</u>
S70040	A	UNIVAC 9400 Processor, Type 3019-00 and -01.
---	-	UNIVAC 9400 Dual I-O Selector Channel, Type XXXX-00 and -01.
P10076	A	Disc File Control, Type 5024.
P21109	-	8414 Disc File.
4091622	-	Maintenance Control Routine.
4091623	-	Parameter and Message Routines.
3844459	-	5024/8414 Disc Program Handler.

2. FUNCTIONAL DESCRIPTION

2.1 General Organization. This program writes Count, Key and Data records on any or all cylinders of an 8414 Disc Pack and reads back the records to verify the accuracy of the data writing. Writing after seeking different cylinders in a crisscross pattern is performed to test the head positioning mechanism. Crisscrossing can be accelerated or decelerated by decreasing or increasing the size of the records being written.

2.2 Program Description

2.2.1 Test 1 (Group Test)

Objective - The objective of test 1 is to enable several tests to be internally selected simply by entering subtest 1. Test 1 selects tests 2 thru 5.

Method - The program places bits into the parameter location which tells DSKII which tests to enter.

2.2.2 Test 2 (Normal Data Write)

Objective - This test writes data or key and data records containing a fixed or random data pattern on any portion or all of the 203 cylinders of a disc pack.

Method - The test determines the number of records that will fit on a track, unless designated otherwise by option. It writes 8 records at a time with a selected or random data pattern and reads back and verifies the correctness of the data. The last group of records on a track may be less than 8. Any portion or all of the 203 cylinders may be selected for writing. The test assumes that Home Address and Record 0 have been previously written on each track.

2.2.3 Test 3 (Alternate Write-Read and Read-Write)

Objective - Odd-numbered, then even-numbered key and data records are rewritten in the disc test area and read back to verify the accuracy of writing.

Method - Data is first written by test 2, then the following sequence of writes and reads takes place over the selected test area.

- 1) Eight Read CKD commands are executed.
- 2) Eight alternate Write-Read KD commands are performed using the data read in step 1.
- 3) The eight CKD records are read back and compared with those of step 1.
- 4) Eight alternate Read-Write KD commands are performed.
- 5) The eight CKD records are read back again and compared with those of step 1.
- 6) The test advances to the next 8 records, repeats steps 1 through 5 and continues this process to the end of the test area.

2.2.4 Test 4 (Criss-Cross Write)

Objective - This routine is designed to test track switching by switching to a different track after every 8 reads or writes.

Method - Data is first written on the entire test area. Then 8 KD records of the first track and cylinder of the test area are read into Area 1 and 8KD records of the last track and cylinder of the test area are read into area 2. Next, Area 1's KD records are written on the last track and cylinder and Area 2's KD records are written on the first track and cylinder. This is continued until the two track are filled, then the first track number is incremented, the last track number is decremented, and the preceding process is repeated. When the two current cylinders are filled, the first cylinder number is incremented, the second is decremented, and the process continues until the center of the test area. The entire test area is then read back to check the accuracy of the writing. Track switching may be accelerated or decelerated by reducing or increasing the record size.

2.2.5 Test 5 (Read Test Area)

Objective - This test is designed to read a disc written by another disc file using test 2 or 3.

Method - The entire test area is read and the data is checked for accuracy of writing.

3. - OPERATING PROCEDURES

The Disc Handler Routine DSKII is used as a standard interface between the program and MCR. All operating procedures described in the DSKII documentation hold equally well for this program. See PDD 3044459.

3.1 Initialization. See DSKII documentation. The program is called by typing in the name D4120.

3.2 Test Program Parameters. See DSKII documentation. The following addition parameters are available for this test program:

V6/aaaa/aaaa

aaaa = data pattern to be used in each record written. If this parameter is not used, 55AAAA55₁₆ will be repetitively written in each record.
If the rr option of V17 is selected (random data pattern), V6 is nullified.

V17/kkdddddrr/11vv0000

kk = key length of record to be written. If this parameter is not specified, 0 is used.

dddd = data length of record to be written. If this parameter is not specified, 64₁₆ is used.

rr = 01 if a random data pattern is to be written.

11 = number of records to be written on each track. If this parameter is not specified, the number of records that will fit on a track is calculated by the program.

vv = 01 if the records that were written in test 2 are not to be read back and verified.

V15/cc/hh - Starting cylinder and head number, in decimal. If this parameter is not specified, cylinder 80 head 0 is used.

3.3 Test Program Messages. The DSKII documentation describes all test entry and exit messages and a standard I-O error message. Data errors are detected by the program, and all data error messages are contained in the program. Register 9 is used to jump to the various error routines, so its contents are printed with most error messages.

3.3.1 Test 1 - A simple parameter setting is performed here, so no errors can occur.

3.3.2 All Tests.

1. R9 XXXXXXXX

ERRONEOUSLY READ CYL XX HD XX INSTEAD OF CYL XX HD XX

The Home Address on the track does not match the cylinder and head number of the Seek command.

3.3.2 Continued

2. R9 XXXXXXXX

ERRONEOUSLY WROTE ON CYL XX HD XX RDC XX INSTEAD OF CYL XX HD XX
RCD XX

A record written by a Write Key and Data command was not written behind
the expected Count Area.

3. R9 XXXXXXXX

CYL XX HD XX RCD XX BYTE XXXX ERRONEOUSLY WRITTEN AS XX
SHOULD BE XX MEM ADDR XXXX

A byte within a Count, key or data record was not written correctly.
It is also possible that the record after being written was read back
incorrectly. The memory address of the byte in error is given. More
than one byte may be in error. The printout reflects only the first
erroneous byte to be detected. The bytes are numbered starting with
the first byte in the count area and continuing into the key (if any)
and data record.

4. SUPPLEMENTARY DATA

4.1 Supplementary Software Information. Each test of the program is entered separately by DSKII and stands alone. It could be extracted from the rest of the program and either be eliminated or assembled by itself with DSKII.

4.2 Supplementary Hardware Information. See DSKII documentation.