

OS-9 Level II
SDISK3-DMC Software
User's Manual
Final Version

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Credits

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>>>>>> READ THIS FIRST <<<<<<<

1.0 About Your Order

Before you open the envelope containing the diskette, examine the documentation to confirm that you have received what you ordered. Especially read the "Introduction" and "System Prerequisites" sections to verify that the software you ordered is what you need for your system. If you have received the wrong software, return the unopened diskette package with all documentation and a note stating the problem, and we will send you the correct item. No exchange will be given after the diskette envelope is opened, except to replace a defective disk (refer to the "Trouble-shooting" section).

2.0 User Feedback

If you have any suggestions on how we can improve the software or manuals please let us know. If you discover any bugs in the supplied software, or errors and omissions in this manual, call or write to tell us about it — we can't fix problems we're not aware of! On the other hand, unsolicited testimonials will be accepted too!

7.1 CACHE (pronounced like "cash", not "catch")

Syntax: **cache /devname [-n]**

Function: Enables or disables disk caching for the specified drive, or tells the SDISK3 driver that a different disk has been inserted into a cached drive.

Parameters:

- devname* The name of the disk drive which is to have caching enabled or has had a disk change. If caching is being disabled, this can be the name of any disk drive associated with the SDISK3 driver — it doesn't have to be the name of the drive currently enabled. This parameter must always be specified.
- n** Disable caching for the specified drive. If this parameter is left out, caching will be enabled, or if caching is already enabled, the cache will be reset (erased).

Notes:

- **WARNING — DISK CACHING CAN DESTROY DATA ON YOUR DISKS unless you strictly follow the four rules presented here:**
 - a) Before enabling caching, make sure that the CACHE command can be run without accessing the drive to be cached. In other words, the CACHE program should be memory resident (LOAD'd into memory) or reside on a non-cached disk. This is to prevent you from getting into a catch-22 situation when you follow rule (b) below.
 - b) If you want to put a different disk into a drive that has caching enabled, first make sure that that drive is not currently being accessed, then change the disk, then before anything else accesses that drive again, run CACHE to reset (erase) the cache for that drive. We will not be held responsible for any disks that you clobber by forgetting this rule.
 - c) If at any time you can't remember if disk caching is enabled or not, or which drive has caching enabled, disable caching immediately, then re-enable it if desired.
 - d) Before inserting a non-OS9 disk into a drive, make sure that caching is disabled for that drive. Do not enable caching for a drive containing a non-OS9 disk.
- The current version of SDISK3-DMC only allows you to have caching enabled for one drive at a time. If a drive has caching enabled, and you subsequently enable caching on a different drive, caching will automatically be disabled (and the cache erased) for the first drive. Only the drive most recently enabled will be cached.
- Several other programs also affect the status of disk caching:
 - a) Caching is automatically disabled when TESTBUFR is run.
 - b) Caching remains enabled, but the cache is reset (erased) whenever the "write track" function is used (by SFORMAT or other disk

- For more information on disk caching, refer to the "Theory of Operation" section later in this manual.

Examples:

- OS9 : **cache /D0** *[enables or resets caching on /D0]*
- OS9 : **cache /D1 -n** *[disables caching on all drives]*

A sample display on an 80 column screen looks like this:

```
Module to patch:D0
display from offset (4hex):
D0
OFST  0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F  0123456789ABCDEF
0000 87 CD 00 33 00 25 F1 83 D1 00 27 00 2A FF 07 FF  .M.3.%q.Q.'.*..9
0010 40 13 01 00 03 20 01 00 28 02 00 00 12 00 12 02  @.....(..
0020 08 00 00 00 10 44 B0 52 62 E6 53 64 69 73 6B B3  ....D0RbfSdisk3
0030 45 99 74                                     E.t
patch at offset (4hex):0014
Ofst:0014 Data:03 . Data/Cmd:02
```

- (Q) Quit** — Quits KWIKGEN and returns to OS-9. But before actually doing so, KWIKGEN checks to see if any modifications have been made to the contents of the buffer (with Load, Del, Ins, Mov, Ren, Pat) after you last saved it to disk (with "Writ"). If there have, a warning message appears and you are given a chance to return to the menu instead of quitting now (so you can issue a "Writ" command before "Quit").
- (? or H) Help** — Displays one or more help screens. You are prompted to either select one command to be explained, or to sequence through explanations for all commands. If you choose "all", you can press the control-BREAK key at any "more ..." prompt to exit the sequence, otherwise press any other key to show the next explanation. This help facility is memory resident, so doesn't need to access any disk.

Other Notes:

- KWIKGEN temporarily disables three keyboard functions. Since the control-BREAK keypress is used frequently in KWIKGEN, the usual actions of the BREAK (keyboard quit) and shift-BREAK (keyboard abort/interrupt) keypresses are disabled so that accidentally pressing the wrong key won't cause KWIKGEN to terminate. In addition, the automatic screen pause function is turned off to prevent KWIKGEN from "freezing" halfway through a screen update. Note that KWIKGEN requires its standard input (.0) and standard output (.1) paths to both point to the same device in order for these three functions to be properly updated.

These three keyboard functions are automatically restored to their previous settings when KWIKGEN quits. However, if you use KWIKGEN's "Shel" command, these functions will still be disabled while other programs are being run from within KWIKGEN.

- KWIKGEN will run just as well on most video display terminals (VTD's) connected to serial ports as it does on the CoCo 3 built-in keyboard and video display, as only these four control codes are used for screen output:

```
$07 bell
$08 backspace
$0A line feed
$0D carriage return (but cursor must stay on same line)
```

In addition, whenever this manual or KWIKGEN's prompts refer to the control-BREAK key, you will typically use the ESC (escape) key on the

7.10 TESTBUFR

Syntax: testbufr [-8] [-32] [/devname]

Function: Tests the static RAM chip on the DMC controller

Parameters:

- 8 / -32 The capacity (8K or 32K bytes) of the static RAM chip installed in the DMC controller. Defaults to 32K if not specified.
- devname The name of any disk drive associated with the SDISK3 device driver. Defaults to /D0 if not specified.

Notes:

- **WARNING -- DO NOT RUN ANY OTHER PROGRAM THAT ACCESSES A FLOPPY DISK DRIVE WHILE TESTBUFR IS RUNNING.**
- This diagnostic program performs 31 complete passes on the entire 8K or 32K bytes of the RAM, except when it discovers an error, in which case it aborts at the end of the current pass. The message "Cache RAM tested OK" indicates the test was completed with no errors. At 1.79 MHz the test takes 5 seconds for 8K or 20 sec. for 32K -- multiply these times by 2 for .89 MHz.
- If any errors are discovered, TESTBUFR displays for each the address of the error in the static RAM, the test pattern written to that location, and the pattern read back. These values are all in hexadecimal. If more than 17 errors are detected, only the first 17 are displayed, followed by "etc." and a count (in decimal) of the total number of errors in this pass. One or more errors indicate that something is wrong with either the RAM chip, or with its support chips. Refer to the trouble shooting section in the DMC hardware manual for more details.
- If disk caching was active when TESTBUFR is called, the caching is disabled. If you run TESTBUFR with the Radio Shack CC3Disk driver instead of SDisk3, ignore the "Warning - unable to disable caching" message.

Examples:

- To test an 8K RAM chip if /D0 is assigned to a hard disk instead of a floppy drive, but /D1 is a floppy drive:
OS9: **TESTBUFR -8 /D1**
Cache RAM tested OK
- In this example two of the 32K bytes tested bad:
OS9: **TESTBUFR**
ADDR-0148 W-16 R-12; ADDR-0248 W-C0 R-FF;
Errors in cache RAM = 2

SS.DREAD (Function code \$80) Direct sector Read function reads a specified sector into a user buffer. Sector lengths of 128, 256, 512 and 1024 bytes are supported for either single or double density. Non-OS9 disks (such as MS-DOS, CP/M, or FLEX) can be read with this function. Note — some other versions of SDISK do not support a sector length of 1024 for double density, and only allow lengths of 128 and 256 for single-density. Most do not implement the retry disable feature (Reg Y bit 7) either.

Entry Conditions:

- A = path number
- B = \$80 function code
- U = (msb) logical track # / (lsb) physical sector #
- X = address of user buffer (in user map) to read data into
- Y = sector size / format codes

Y-REGISTER CONTENTS															
Y15	Y14	Y13	Y12	Y11	Y10	Y09	Y08	Y07	Y06	Y05	Y04	Y03	Y02	Y01	Y00
lsb sector size								msb sec siz x							
S07	S06	S05	S04	S03	S02	S01	S00	rry	S10	S09	S08	-	rpi	dns	sid

(Y contains the following:) bits 8-15 = least significant 8 bits of 11 bit sector size in bytes bits 4-6 = most significant 3 bits of 11 bit sector size with bit 6 being the most significant bit of the 11 bit number bit 7 = retry (0 = normal retry, 1 = no retry) bit 3 = (not used, reserved for Hi-density) - set to 0 bit 2 = tpi of data on diskette (0=48 tpi, 1=96 tpi) bit 1 = density of data on diskette (0=single, 1=double) bit 0 = side (0 or 1)

Exit conditions:

The buffer pointed to by Reg. X contains the data read from disk

If error:

- CC = C bit set
- B = error code

SS.SDRD (Function code \$84) System Direct Read function -- same registers used and same function as SS.DREAD except that the buffer address in Register X is in the system memory map instead of the user memory map. This call is not available in some other versions of SDISK.

SS.DWRIT (Function code \$80) Direct sector Write function writes a specified sector from a user buffer. Sector lengths of 128, 256, 512 and 1024 bytes are supported for either single or double density. Non-OS9 disks (such as MS-DOS, CP/M, or FLEX) can be written with this function. Note — some other versions of SDISK only support sector lengths of 128 and 256 for single density. Most do not implement the retry disable feature (Reg Y bit 7) either.

Entry Conditions:

- A = path number
- B = \$80 function code
- U = (msb)logical track # / (lsb) physical sector #
- X = address of user buffer (in user map) to write data from
- Y = sector size / format codes