
PROVISIONAL USER GUIDE FOR THE STL DDFS 2.0 ROM

2.0 ROM does have a mini built-in wordprocessor (*WORD) but if you require a fully blown version, we can supply it on a separate disk containing the WP (wordprocessor program, around 5k of machine code) and SILEX, the spelling checker and a 70 page manual at a nominal cost of £3.00 inclusive of VAT, postage and packing.

The WP disk is normally available in both 40 and 80 track format. Please specify when ordering.

The new 2.0 ROM is capable of replacing any version of the Acorn DFS including the DNFS1.2.

When selected, 2.0 ROM will identify itself by the following message:

DFS 2.0 (1170)

or

DFS 2.0 (8271)

BASIC

BASIC

>

>

NB: 2.0 ROM will automatically perform a self test, your BBC computer may lock up if components of the DFS are not all fitted. If you are installing a new system, be do not be alarmed.

It also has a very extensive list of available commands to provide the users with the most friendly error trapping and correction mechanism and outstanding features as detailed below. It also has a neat way of avoiding name clashing with Disc Doctor or any other ROM. If one of your ROMs have the same *command as the 2.0 ROM, prefix the command with a £ (pound) sign and the command will be attributed to the 2.0 ROM. For example, if you have DISC DOCTOR, *VERIFY will send the command to DISC DOCTOR first if it was present, *£(pound sign) VERIFY only to the 2.0 ROM.

1. UNLIMITED FILENAMES.

When the number of filenames present on the current catalog reaches 31, a new catalog will be automatically created. You will notice that *CAT will be printed on the screen:

320 Total Sectors

Discl-JAN (40)

Drive:0

Option:3 (EXEC)

Directory:0.\$

Library:0.\$

!BOOT

MENU

etc...

.etc..

Press any key to continue-

Press the space bar. You should see:

Catalogue 2:

!BOOT
etc...

FRED
.etc..

This process is completely transparent to the user.

LOAD, SAVE, RENAME, INFO, SPOOL, DUMP, TYPE, LIST, OPENIN, OPENOUT, OPENUP, BGET, BPUT etc.. will work as usual.

1.2 STORED CATALOGS AND CURRENT CATALOG.

When more than 1 catalog are present on the same diskette, the last catalog (as it comes last with *CAT) is the current one. All other catalogs are stored.

1.3 DELETE FILE.

*DELETE <fsp> works as usual, on any catalog.

*DELETE and *WIPE effectively remove the file on the current catalog but simply mark 'File Deleted' on a stored catalog by changing its directory letter to &FF.

You may use *DZAP to restore a deleted file but please remember that if the same name is being used in another catalog, you will have to replace the deleted filename by a new one while you are restoring it.

1.3 *COMPACT.

*COMPACT works as usual on the current catalog but will not operate on stored catalogs.

If you need to tidy the entire disk when several catalogs are present, one way of doing this is to *COPY all files (*.*) to another disk.

2. *DCOPY, DISK COPYING.

This command allows the user to make backup copies of non-standard format disks. The DCOPY operates on one track at a time copying first the format and then the data.

In the case of the 8271 type FDC the system is based on up to 10 sectors per track, whereas on the 1770 up to 16 sectors are catered for.

There are, however, a few limitations when using the 1770 to copy certain discs. This is due to the fact that the 1770 cannot format an ID field with any number over &F6. To get round

this problem a mask is used with any sector or track number greater than &F0. This mask has the value of &EF and is automatically inserted during DCOPY when the 1770 is used. To run a disc which has been so masked use the command *MASKON before any operation. If ,however, the mask is not required then use the command *MASKOFF.

At the beginning of the DCOPY routine the user is asked whether to normalise sector length or not. This is because some discs use a false sector length which will cause the 1770 to crash out with a CRC error, this is avoided by entering Y for yes after the prompt. This will then set all sectors encountered to a length of 256 bytes (the standard on the BBC micro).

3. *DZAP, DISC SECTOR EDITING

This is a utility to enable the contents of the disc to be examined and, if necessary, to be altered. If just *DZAP is typed in then track and sector will default to zero. If any other number is required then just type in the track followed by a space and then the sector number in hexadecimal.

A display will be given on the screen of the required sector, this display will be in rows of hexadecimal and ASCII information.

This information may now be altered either in hex or ASCII depending on the status indicator in the top right corner of the screen. This is a toggle between hex and ASCII and is altered by pressing the tab button.

The cursor may be moved around the display by means of the cursor and shift/cursor keys. Data is entered at the cursor position which is incremented after each change.

The sector and track position is changed by means of the CONTROL+cursor keys. The current position is always displayed at the top of the screen.

If a disc error is encountered the error type is displayed under the current status line. If the data was able to be recovered from the disc then it may be modified and restored to disc without further error from that sector.

The current sector may be saved by pressing ESCAPE upon which a flashing prompt is displayed. This is "SAVE Y/N ?" if you require the sector to be saved to the disc type in "Y" any other character will exit from DZAP without saving the sector.

4. *MZAP, MEMORY EDITING

The MZAP command is another utility similar to DZAP in it's operation. This time however it operates on the memory in the BBC rather than on disc.

Once again the cursor movement is controlled by the cursor and SHIFT+cursor keys and data is entered in either hex or ASCII depending on the status (toggled by the TAB key) indicated at the top right corner of the screen.

The start address of MZAP defaults to 0000 but the address may be specified if required (in hex). e.g. *MZAP 1900 for a start address of &1900.

5. TAPEDISC.

The Tapedisc utility allows most tape based programs to be transferred to disc. This includes those programs that are "Locked".

The program is run by entering *TAPEDISC <fsp>.

This may be the name of a specific file or just RETURN .

If a filename is specified the program will look for and transfer just that one program . If however only the RETURN key was pressed then the program will stay in a continuous loop and transfer as many programs as it can find, either until the end of tape or until the disc is full. To exit at any time from this mode it will be necessary to press the BREAK key.

Once transferred to disc many tape programs will run correctly. However those that have machine code portions will have to be relocated to their correct location usually starting at &OE00.

This can be done by means of a short relocater program that will move the data from &I900 to &I900 plus the file length down to &E00. The program must then be started by a call to its original execution address which will be displayed during the tape to disc transfer , so if the start address is &OE46 then then program must be started by typing in CALL&OE46 etc.

Other differences that will need to be rectified on tape programs that call the next program on the tape is the removal of the statements such as CHAIN"" or LOAD"". The effect of these statements is just to get the next program on the tape. When these programs are run on disc the required filename must be inserted in place of the inverted comma's. A further point to remember is that disc filenames can only be up to 7 characters long whereas on the tape they may be up to 10 characters long. This will lead, in many cases, to truncated filenames on the disc, although these files may be renamed at any time by means of the *RENAME command on the DFS.

Occasionally files are found on tape with no name and in this instance the file sent to disc will be called "No_name", and once more may at any time be renamed.

6. LOADTAPE, TAPESAVE and DOWNLOAD.

LOADTAPE and TAPESAVE are mostly identical to *TAPEDISC but will save everything on the tape to disc, regardless of the status of the tape block flag. These commands are used to recover heavily corrupted tapes.

The LOADTAPE command is first issued to recover the data from tape. When enough of the tape has been loaded press ESCAPE to exit from the load routine. Once this has been done use the TAPESAVE command to save the recovered file to disc.

*DOWNLOAD can be used to load originally tape based machine code or basic programs to below PAGE. For example:

*DOWNLOAD GAME1 <RETURN>

The computer will reply:

to &-

Answer with an appropriate address (but not below 200 hex), such

pointed out that the method of operation is just a basic emulator program and is only recommended for the running of games discs. It is also worthwhile noting that ACORNSOFT, MICROPOWER and ISLAND LOGIC now supply Solidisk DDFS compatible discs. Please check with your local dealer to ensure that you do have the latest copies of any discs produced by these firms.

12.1 ELITE.

ELITE runs perfectly without any special attention unless you have an early copy of the game. Early versions of ELITE can be made to run by holding the SHIFT key while power up the computer. If the computer hangs up at this stage, try *MASKOFF then restart by SHIFT BREAK. If this is still not effective, then try *MASKOFF then *SSTEP followed by SHIFT BREAK. This time the program will more than likely run O.K. if it does fail to run then *MASKOFF and press SHIFT BREAK again until it runs.

12.2 MINI OFFICE.

To run MINI OFFICE it is necessary to type in *ENABLE 80 <RETURN> followed by *MASKOFF <RETURN>. Once this has been done hit the SHIFT BREAK keys and the program should run. If any problems are encountered type in *FX200,3 <RETURN> and repeat the above procedure.

12.3 CASTLE QUEST.

Castle Quest requires *Enable 80 if you have 80 track disk drive.

12.4 OTHER PROTECTED DISKS.

Most leading software producers are now well aware of the increasing number of DDFS users and do make a real effort to produce compatible products.

13.*WORD. WORD PROCESSOR.

To create a new document, simply enter *WORD <RETURN>.
To edit an old document (for example FRED), you should enter:

*WORD FRED <RETURN>.

There must be a space between *WORD and FRED. The first step of creating and editing a document is always loading it into memory. This is done automatically when you specify a filename (such as FRED above).

The file evoked (FRED) is then loaded into memory, no alteration is made to the copy on your disk.

The last action of any word processing is to save the edited version to disk. This is done as follows:

!S JIM <RETURN>

A name must be specified, otherwise an error will result. So, if you save it as JIM, FRED is left unchanged. If off course you want to save it as FRED, the old file FRED will be deleted and the new file FRED contains the newly edited version.

!S FRED <RETURN>

In between load and save the documents, you may enter any amount of text or editing commands. Unlike load and save which operate on the entire document, the editing commands operate only on the CURRENT PARAGRAPH. You will notice later on that all the commands start with the exclamation mark '!' then the command proper. Only the first letter of the command is significant so you do not have to type in the command in full. Some commands also take a number a argument, in this case, the number must be typed immediately after the command first letter.

The screen display some text and specially a paragraph between 2 drawn lines. It is the currently edited paragraph.

f0 UP:

This will move the current paragraph to the line above.

f1 DOWN:

This will move the current paragraph one line down.

!Q (QUICK):

This will move the current paragraph to the end of text. The drawn bar will then disappear completely. This will always happen if you are creating a new document or if you are adding more text to an existing document.

In this mode, text is automatically inserted into the document without you having to enter !INSERT (see below).

!D (DELETE):

This will delete the current paragraph.

You may delete between 1 to 9 paragraph(s) by adding a number immediately after !D. For example:

!D5 <RETURN> will delete 5 consecutive paragraphs.

!I (INSERT):

This will insert an extra paragraph just above the current paragraph. The newly inserted paragraph becomes the Current Paragraph.

You may insert between 1 to 9 paragraph(s) by adding a number immediately after !I. For example:

!I5 <RETURN> will insert 5 lines.

!* SYSTEM.

* commands such as *, *EXEC, *MZAP etc can be used.

Except the 2 function keys (f0 and f1), all other function keys can be programmed by you to insert any text into the keyboard buffer.

Newly entered text will automatically replaces the current paragraph.

If you need to add more text to the end of the document, you just carry on typing.

*WORD * RESTART WP.

If an error occurs while you are using a MOS * command, nothing is lost if you proceed as follows:

1) Press the BREAK key.

2) Enter immediately: *WORD *<RETURN>.

Do not omit the space between the word WP and the last *.

*WORD works with all screen modes, the maximum paragraph can be up to 253 character long.

After saving the document, hit the BREAK key to leave.

To print, enter:

VDU2,12:*TYPE JIM <RETURN>

14. DFS COMMAND IDENTITY LETTER:

All Solidisk DFS commands may be made unique to avoid name clashing with other BBC ROMs by preceding the command with an identity letter.

Solidisk DFS identity letter is the POUND sign £.

For example, *RECOVER is also being used on Computer Concepts Disc Doctor, if you type in *RECOVER, it will be passed preferentially to Disc Doctor (if available) but *£RECOVER will exclusively go to Solidisk DFS.

15. FILING SYSTEM COMMANDS.

) This important subject is of great interest to those who wish writing their own disk software. If you are only interested in using available programs (as the majority do), a quick reading would still be beneficial.

Filing system is the part of the MOS dealing with program and data storage, ie tape, disc and network.

The MOS ROM controls the tape directly but leaves the disc to more appropriate software in the Solidisk DFS ROM.

A convention is then required so that the MOS can work with either Acorn DFS or Solidisk DFS or somebody else's. This convention is now explained in detail.

In essence:

- 1) Process 7 file tasks: Osfile (&FFDD), Osargs (&FFDA), Osbget (&FFD7), Osbpuc (&FFD4), Osgbbp (&FFD1), Osfind (&FFCE) and File Control.
- 2) Process Unknown commands.
- 3) Process Unknown OSWORDS.

Let's start with the easy points of unknown commands.

15.1) PROCESS UNKNOWN COMMANDS.

All system commands going through OSCLI (entry point at &FFF7) will be either served by the MOS or if unknown to the MOS offered to other ROMs.

Solidisk DFS will check the command first against the list that is printed on *HELP DFS and *HELP UTILS.

If there is no such command on the list, it will then load the disc directory and search for a matching name. If found, the specified file will be then loaded and run.

15.2) PROCESS UNKNOWN OSWORDS.

3 OSWORDS are specifically dealt with by Solidisk DFS.

15.2.1 Osword 7D.

This Osword supplies the 'Cyclenumber' of the requested disk. To use this Osword, you will have to designate some free memory locations so that the DFS can return the result.

For example:

```
10 HIMEM=&2000: REM Make some free memory above &2000
20 A%=&7D:X%=0:Y%=&20:CALL &FFF1: REM Osword 7D with parameter
   block at &2000
30 PRINT ?&2000:END
```

This program will print the Cyclenumber ie the number of times the disc has been written to.

This cyclenumber is often used as a way to detect if somebody has tampered with the disc. For example *WIPE *.* uses it to prevent you from removing the disc in between the questions 'Yes/No'.

15.2.2 Osword 7E.

This Osword returns the disc size.

For example:

```
10 HIMEM=&2000: REM make some free memory
20 A%=&7E:X%=0:Y%=&20:CALL &FFF1: REM Osword 7E with parameter
   block at &2000
30PRINT "Disc size in bytes= "&?&2002;?&2001;?&2000
```

Solidisk DFS replies with 3 bytes low-mid-high.

It is interesting to note that the same number appears in the top left corner of the disc directory.

15.2.3 Osword 7F.

This is the most complicated command that Solidisk DFS has to deal with.

To start with, if the WD1770 FDC is being used, Solidisk DFS will translate the command code and results to match the response of an Intel 8271.

If the Intel 8271 is being used, doublestepping for 40 track discs is checked and performed.

The general format for Osword 7F is as follows:

Parameter block:	Location	Contents.
------------------	----------	-----------

Block + 0		Drive Number (0-3 or FF if same)
Block + 1		Data Address low
Block + 2		Data Address high
Block + 3		High order (FF or 00 if I/O only)
Block + 4		High order (same as above)
Block + 5		Number of details (0 to 3)
Block + 6		Command code (see table below)
Block + 7	First detail if any (usually track number)	
Block + 8	Second detail if any (usually sector number)	
Block + 9	Third detail if any (usually sector size + number of sectors involved).	

NEXT LOCATION:

Result.

Note that the location for the result is not fixed, if 3 details are supplied, this will be Block + 10 but if no detail is given (for example Read Status) this will be Block +8.

If you wish to use Osword7F in your programs, here is an example:

```
10 HIMEM=&2000: REM Make some free memory
20 INPUT "Read from Track= "track
30 INPUT "and from Sector= "sector
40 INPUT "how many sectors (1 to 10)= "n: REM no more than 10
   sectors
50 REM build parameter block
60 block=&2000:7block=&FF : REM same drive
70 block!1=&FFFF2100: REM Data will be sent to &2100
80 block?6=&53:REM read command
90 block?7=track: REM starting from
100 block?8=sector
110 size=&20: REM 256 byte/sector
120 block?9=n + size
130 A%=&7F:X%=0:Y%=&20:CALL &FFf1: REM Do Osword7F
140 IF block?10: GOTO 130: REM retry if bad result
150 *MZAP 2100: REM Show data read
```

You can use Osword 7F in double density as well as on single density disc.

Remember:

- 1) Deal with one track at a time.
- 2) Check the result, if not zero, repeat the last command

(retry).

OSWORD 7F COMMAND TABLE:

Command	Code	Details (eg other parameters)
Seek	&69	Track number
Read Status	&6C	None
Write Spec Reg	&5A	Reg No, data
Read Spec Reg	&5D	Reg No
Read sectors	&53	Track, Sector, No of sectors to read.
Read deleted	&5B	Track, Sector, No of sector to read.
Read ID	&5B	number of IDs
Verify sectors	&5F	Track, Sector, No of sectors to verify
Write sectors	&4B	Track, Sector, No of sectors to write.
Format	&4B	Track, Gap3-6, Size/No of sector, Gap5-6 Gap1-6.

NOTES.

Seek= this moves the drivehead to the specified track.

Status= this is the FDC status. The bit pattern is as follows:

D7	D6	D5	D4	D3	D2	D1	D0
0	RDY1	WRTFAULT	INDEX	WRTPROT	RDY0	TRACK0	0

Solidisk DFS will return &44 in WD1770 (drive ready) as the WD1770 does not require drive up to speed signal.

Special registers:

The 8271 has 14 special registers. The WD1770 has no physical special register but Solidisk DFS maintains 4 pseudo special registers to emulate the 8271 (they are current track registers).

Read Data and Read Deleted Data.

Each sector on the disc is composed of an ID field and a data field, the ID field contains 6 bytes as displayed when using *RTRACK.

The data field can contain 128 or 256 bytes of data.

The sector can also be marked deleted (as shown by data mark=&C8).

Solidisk DFS will read both deleted data and non deleted data. The deleted data flag (&20) will be returned to the result byte.

Format:

Although the DFS has a built-in intelligent formatter, optimised for both 8271 (2 sector skew) and WD1770 (1 sector skew), you may want to run special disc copy programs with their own formatter. It is important to know that these programs will only work if you have the 8271 chip. The WD1770 cannot format tracks or sector

greater than &F5. The sector mask (&EF) will be then automatically used to allow formatting be carried on. The resulting disk will not work satisfactorily.

To use Oswald 7F efficiently, you do need the complete specifications on the Intel 8271 FDC.

More information is available from Intel (3065 Bowers Ave, Santa Clara, CA 95051 Tel. CA (408) 987 8080.

A new standard for double density and Winchester (Oswald 72) has been introduced with the Acorn ADFS (as used on the Electron) to replace the awkward Oswald 7F but its use has not been around yet.

15.3 OSFILE, OSB3ET, OSBPUT, OSGBPB, OSARGS, OSFIND AND OSFCV:

You may find quite a lot of information about the use of these filing system tasks in the User Guide, page 452 to page 455 and in the BBC Advanced User Guide (chapter 16, beware of the error on page 335, the Ofile entry point is &FFDD, not as printed). Solidisk Software package contains sample programs showing practical use of these filing functions (re. Utilities disc). One important point about OSGBPB 8: this function returns a specified number of filenames of a selected library as being used on many 'MENU' programs. The 2.0 ROM's implementation will work with multiple catalogues.

Example:

```
10 REM Program to read n filenames from disc directory $
20 *DIR $
30 HIMEM=&2000 : fcb=&2000 : OSGBPB=&FFD1 : n= 1000
40 ?fcb=0 : REM Set up FCB (file control block), directory
50 !(fcb+1)=&2100 : REM Data storage
60 !(fcb+5)=n : REM n as many as you like
70 !(fcb+5)=0 : Start from the beginning
80
90 X%=0 : Y%=&2000 : A%=8 : CALL OSGBPB
100 *MZAP 2100
```

16. THE 2.0 ROM AND SECOND PROCESSORS.

Solidisk 2.0 ROM is ideal to speed up Acorn's Z80 and 6502 Second Processors, as disc speed is the most important bottleneck for these powerful devices. In many cases, Solidisk 2.0 ROM can double the running speed of your programs.

There are great improvements and also some minor problems. With the 6502 Second Processor, Robocom Bitstik does not run in its present form as 2.0 ROM, Bitstik and the MGS share some common zero page locations.

To boot up the Z80 second processor, proceed as follows:

- If you are going to use only Drive A> :
Switch on BBC and Z80, do Control Break. If the system disc refuses to boot, press Break. Type in *. then repeat

Control Break. It should now boot the system disc in just 2 seconds.

- If you also need drive B> :

Switch on the BBC computer first. Place the System disc (or the Utilities Nol disc) in drive B>, type in *.1 <RETURN>.

To format blank discs:

Do not use the PREPARE or FORMAT programs, although they will run if you have the 8271 chip, they are slow.

It is, on a long run, much quicker to prepare a formatted disc which may hold some of the most frequently used programs such as BBCBASIC.COM, PIP.COM, STAT.COM and duplicate it using the BBC in BBC mode.

Proceed as follows:

1) Switch off the Z80, format both side a blank diskette for 80 tracks, single density. (by *ENABLE S and *F800 then *ENABLE S, *F80 2).

2) Place the System disc (utilities Nol) in drive B, backup side 0 disc B (drive 1) to side 0 disc A (drive 0) (by *ENABLE, *BACKUP 10). Disc A now contains CPM system and directory tracks.

3) Switch on the Z80, do Control Break to boot CPM.

4) Type in ERA *.* , Answer Y to the question. Disc A is now completely blank but formatted.

5) Swap the discs around, Utilities Nol in A, blank disc in B.

6) Type in PIP B:=A:BBCBASIC.COM

PIP B:=A:STAT.COM

PIP B:=A:PIP.COM

and any other programs that you may wish to be copied.

You may REN (rename) BBCBASIC.COM as BOOT.COM (as I usually do) so that everytime you boot up CPM, you will be in BBC Basic.

The disc in B is now your MASTER disc for future duplication and can be used without the Z80 switched on. Switch of the Z80.

To make a new disc, proceed as in steps 1 and 2 but use the new MASTER disc in lieu of the Utilities Nol. It will save you a lot of time!

Solidisk will produce a new BIOS allowing Double Density (640k per disc) to be used with CPM. The new BIOS disc contains other programs such as a disassembler for the Z80 and disc sector editor, it costs £5.00.

INSTALLING THE DFDC BOARD

You can fit the SOLIDISK DFDC whether or not you already have an ACORN DFS fitted - it will still work. If you do have an ACORN DFS installed in your computer this board will enable you to switch between the ACORN DFS and the SOLIDISK DFS, allowing you to take advantage of the facilities provided by both.

First read Section 1 (Installation Procedure) of the DFS Manual. This will give you a general idea of the dismantling procedure of the BEC and the IC locations.

To install the DFDC board remove the 8271 FDC which is located in position IC 78 (see para 1.2.4.1.). Plug the 8271 into the blue socket on the DFDC board with the notch close to the white dot at the top.

Now insert the DFDC board in the empty socket making sure that the board is orientated with the NORTH end towards the rear of the BBC. This may entail removing the keyboard connector (see para 1.2.4.2.).

Now locate IC86 and 87 (see 1.2.3.1 and 1.2.3.2). Once this is done connect the green wire from the DFDC board to pin 1 of IC86 and the yellow wire from the DFDC board to pin 9 of IC87. These wires can either be soldered direct to the pins of the ICs or the ICs can be removed from their sockets and the wire then pushed into the appropriate hole and the ICs reinserted.

Install IC79 and IC80 (see para 1.2.5.1).

The STL DDFS ROM should now be installed in the Rom Socket IMMEDIATELY TO THE RIGHT of the ACORN DFS chip. This may involve having to move the Acorn chip to another socket. Reconnect the keyboard, if previously disconnected, making sure that it is properly aligned.

Now POWER ON.

Depending on the position of the switch attached to the DFDC board the monitor will show:

BBC Computer 32K

BBC Computer 32K

DDFS 1-A

OR

ACORN DFS

BASIC

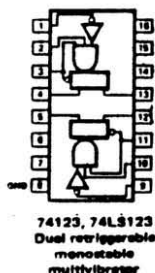
BASIC

>

>

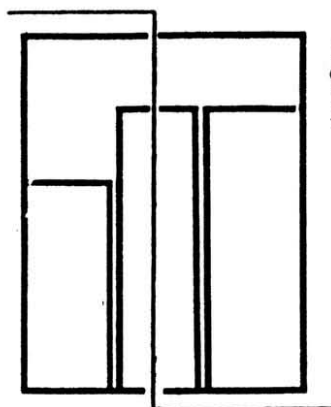
Reversing the position of the switch and pushing BREAK will give you the opposite DFS. You may have to push BREAK twice if change over is not immediate.

If the DFDC does not work as shown check all connections. Make sure that there are no bent pins on the underside of the DFDC board.



IC 87
Connect Raw Data line (yellow)
to pin 9.

IC 78 DFDC BOARD (North)

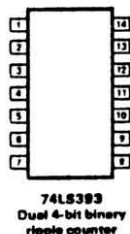


(IC 79)

(IC 80)

(Keyboard connector)

IC86
Connect Clock
line (green)
to pin 1



If all is well replace the keyboard and screw it down. Then replace the top cover with the switch protruding through the cut-out at the back of the BBC. Now any time you wish to use the alternate DFS simply change the position of the switch and press BREAK.

PLEASE NOTE:

The Rom will not come up on the screen until all the components have been installed.

scans are in 300dpi
pagesize is A5 (booklet A4)
unfortunately pages 5 and 6 were missing. 10 and 11 were also M.I.A., but I found a copy (of a copy of a) somewhere.