

 **ACORN COMPUTER**

The DNFS instruction booklet

Note

The DNFS ROM contains the software necessary to utilise the disc and/or network facilities of the BBC Microcomputer. It can only do so if the appropriate disc and/or network hardware is fitted to your computer. The disc and network hardware upgrades are available from authorised Acorn dealers.

Within this publication the term BBC is used as an abbreviation for British Broadcasting Corporation.

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The DNFS instruction booklet

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1 Language and filing system ROMs

Operating procedure

There are five 28-pin sockets located in the bottom right hand corner of the main printed circuit board (PCB) inside the case. Socket 51 (furthest left of the five) should always contain the machine operating system ROM (MOS). This leaves four spare ROM sockets available for the language and filing system ROMs.

The four ROM sockets have an operating priority, decreasing from right to left. On hitting and releasing the **BREAK** key while holding down the **CTRL** key (hard reset), or when the computer is switched on, the language ROM in the rightmost socket takes priority over any other languages. Similarly, the filing system ROM in the rightmost socket takes priority over any other filing system. So the position of the DNFS ROM in relation to any other filing system present will determine whether the machine starts up in disc or network filing system (DNFS), or in another filing system.

If you want to start up in either the disc or net filing system then you must insert your DNFS ROM to the right of any other filing system ROMs.

When fitted, the DNFS ROM checks to see whether Econet and/or disc hardware is present. If both Econet and disc are available the DNFS ROM will automatically select the disc filing system.

Of the two filing systems within the DNFS ROM, the disc filing system normally takes priority. However, if you require the computer to start up in the net filing system a wire link has to be fitted at the bottom right hand corner of the keyboard (see chapter 4).

2 Inserting the DNFS ROM

WARNING! DO NOT REMOVE THE LID OF THE COMPUTER WHILST IT IS CONNECTED TO THE MAINS, OR CONNECT THE COMPUTER TO THE MAINS WITH THE LID REMOVED.

Please read through these instructions completely before starting. If you are not completely confident of your ability to carry out the upgrade yourself, then it is in your own interests to take your unit to an authorised dealer for him to carry out the upgrade.

Please follow the steps listed below:

- a.** Ensure that the machine is switched off and disconnected from the mains power supply.
- b.** Unscrew the two large screws in the back panel of the machine, possibly labelled 'FIX'.
- c.** Unscrew the two large screws in the underside of the machine (near the front), possibly labelled 'FIX'.
- d.** You can now carefully remove the lid to get at the main printed circuit board.
- e.** Once the top lid is removed you must then disconnect the keyboard. This is done by unplugging the 17-way connector between the keyboard and the main PCB by carefully pulling the socket off the pins of PL13 on the main PCB. If the speech upgrade has been fitted, unplug the ten-way connector between the keyboard and the main PCB by carefully pulling the socket off the pins of PL14 on the main PCB.
- f.** Unscrew the two (or three) bolts (with retaining nuts and washers) holding the keyboard assembly to the lower case.
- g.** Move the keyboard assembly carefully away from the main PCB until the speaker plug, PL15, is accessible.
- h.** Unplug the speaker lead carefully from PL15 and set the keyboard to one side.
- i.** The current disc filing system (DFS) ROM and/or net filing system (NFS) ROM is situated in the bottom right hand corner of your computer, in any of the sockets numbered IC52, IC88, IC100 or IC101. See Figure 1.

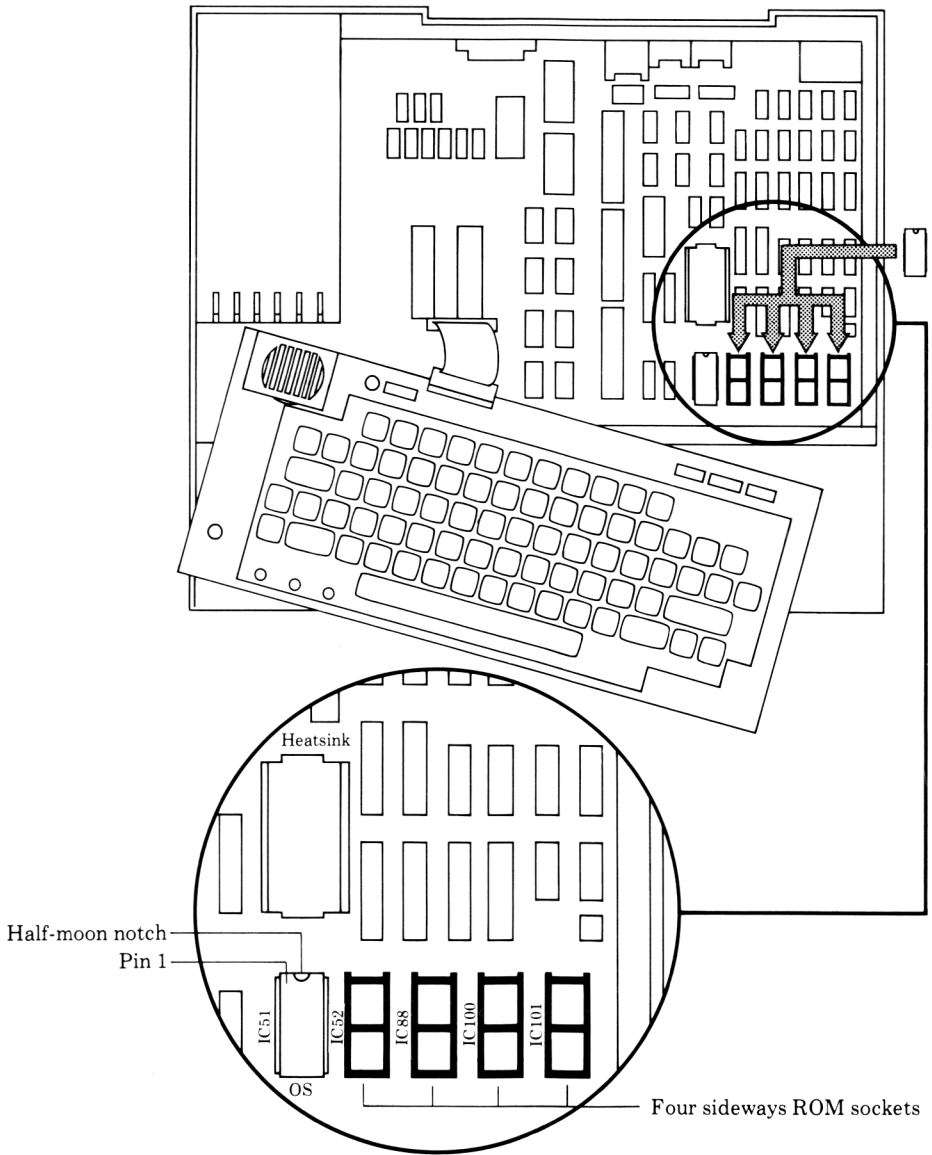


Figure 1

The DFS ROM is identified by the marking 'DFS 0.90' printed on a label on its upper surface. The NFS ROM is identified by the marking 'NFS 3.34' printed on a label on its upper surface. The above ROMs normally occupy the sockets numbered IC100 and IC88 respectively.

j. Carefully remove the DFS and/or NFS ROMs from their sockets using an IC extractor. (A small screwdriver will do if you are *very* careful – gently prising up each end a bit at a time.)

k. The removed ROMs should be kept in a safe place, protecting the pins by using some foam. (Possibly the foam supplied with the DNFS ROM).

l. The new DNFS is supplied as a single ROM and is identified by the legend:

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00201666-01

m. Remove the ROM from the foam and visually check that all the pins are evenly spaced and aligned in two straight rows. If bent, gently straighten them using small pliers or tweezers, remembering to take care, as the pins are not very strong.

n. The ROM should be orientated so that the half moon notch at one end of the ROM is at the top (ie away from the keyboard). Insert the ROM into a socket, normally the one marked IC88, ensuring that all the legs locate properly into the holes in the IC socket and are not bent upon insertion.

o. Reposition the keyboard and connect the two (or three – with speech fitted) leads from the keyboard to the same plugs that they were removed from (PLs 13, 14 and 15) and sit the keyboard in its correct position. Replace screws, nuts and washers, but do not fully tighten at present.

p. Replace the lid (checking the two fixing clips are still attached). For safety reasons, you are advised to insert two fixing screws.

q. Connect the computer to a mains supply and a TV/monitor and switch it on. Turn on the computer. You should hear the usual two tone 'bleep' and see the message:

```
BBC Computer 32K  
Acorn DFS  
BASIC  
>
```

```
or  
BBC Computer 32K  
Econet Station xxx  
BASIC  
>
```


on the screen, where xxx is the Econet station number. If all is working correctly go to instruction r. If not, disconnect the TV/monitor and the mains supply and ensure all the instructions above have been followed correctly. In particular check:

- That the new DNFS ROM is correctly positioned (refer to figure 1 and instruction n).
- That all pins are inserted into the socket – if any are displaced, remove the ROM following instruction j, and straighten misaligned pins – instruction m.
- That IC socket 51 contains the MOS ROM, Issue 1.20 or above.
- That all connectors mate firmly together and are positioned correctly.

Replace the lid, reconnect to the supply and try again. If you still have problems take your machine to an authorised Acorn dealer for repair and test.

r. Finally disconnect the computer from the mains and TV/monitor. Remove the lid, and tighten down the keyboard. Refit the lid and screw down using the four screws removed earlier.

s. Your computer is now ready for use.

t. To check that ROMs are present, type

***HELP RETURN**

The following should appear on the screen

DFS 1.20

DFS

UTILS

NFS 3.60

OS 1.20

3 Differences between DFS/NFS and DNFS

If you have been using the disc filing system or Econet on your BBC Microcomputer, you may notice that there are differences between the filing system software you are used to, and the new software provided by the DNFS ROM. More specifically, these differences occur between version 0.90 and version 1.20 of the disc filing system, and version 3.34 and version 3.60 of the Econet filing system.

Changes to the disc filing system

1. Version 1.20 does not allow control characters, top bit set characters and **DELETE** in filenames or disc titles. For example, this means that coloured filenames in **MODE 7** are not possible.
2. The filing system commands **LIB** and **DIR**, and filename searching are different if any part of the full filename is not specified. For example:

```
*DIR X RETURN
*DIR :2 RETURN
```

In version 0.90, this will leave you in drive 2, directory \$. In version 1.20, this will leave you in drive 2, directory X.

```
LOAD ":2.FILE" RETURN
```

Version 0.90 looks for **:2\$.FILE**, regardless of the current directory. Version 1.20 will observe the current directory, and if you are currently in directory X, then it will search for **:2.X.FILE**.

The **LIB** command behaves in the same way.

3. Version 1.20 does not distinguish between upper case and lower case directory names, unlike version 0.90. For example

```
SAVE T.FRED
```

and

```
SAVE t.FRED
```

will **SAVE** the file **FRED** in the same directory.

4. Some filing system messages have been rephrased in version 1.20.
5. Version 1.20 provides an extra option for **OSWORD &7F**. If the drive number given is greater than **&7F** (ie a minus number), the filing system reverts to the currently selected drive.
6. Open file handles, **OPT1**, **DIR**, **LIB** etc, are preserved when hitting the **BREAK** key (soft reset) in version 1.20.
7. Version 1.20 provides line numbers with leading zeros for **BUILD** and **LIST**.
8. In version 1.20 when using the commands ***DESTROY** or ***BACKUP** it is not necessary to use the command ***ENABLE**. For example:

```
*ENABLE
*BACKUP 01
Copying from 0 to 1
```

or

```
*BACKUP 01
Go (Y/N)?
```

Both the above commands achieve the same end result.

Changes to the Econet filing system

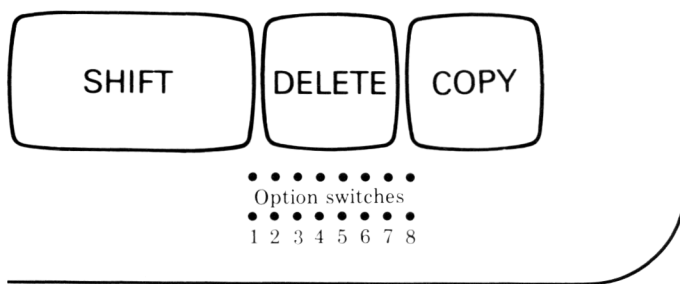
1. Version 3.60 prints catalogue in multiple columns as opposed to single columns in version 3.34.
2. In version 3.60, password can be masked at 'log on' for security.
3. Printing protocols in version 3.60 allow control characters to be sent to the printer server, enabling graphics dumps and 'diablo'-type printers to be used.
4. The Econet system can be run as **IRQ** task with net and disc activities in the foreground. This means that these activities can occur whilst a program is running, and not interfere with the program.
5. Stations fitted with versions 3.60 and above do not recognise 'privileged' station numbers, and will be protected against immediate operations from any number.

4 Keyboard option switches

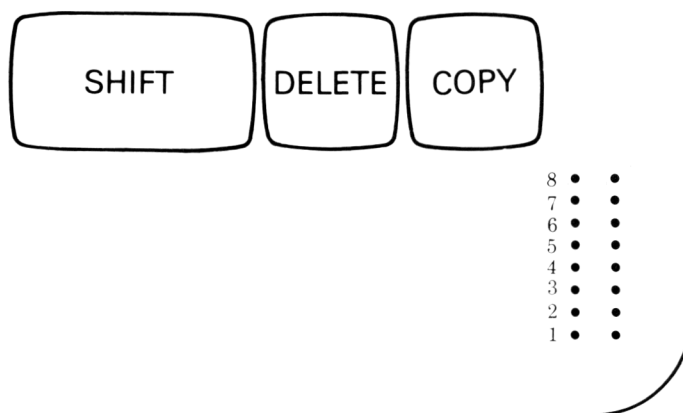
Location

The option switches are located in the bottom right hand corner of the keyboard. They consist of two rows of eight holes pitched to take standard eight-way dual in line (DIL) switches. Two configurations are in existence:

1. 'Horizontal' layout, ie:



2. 'Vertical' layout, ie:



The DIL switches can normally be obtained from local electronic shops or RS Components – part number 337-560.

Usage

The option switches are scanned by the operating system on power-up or on pressing **BREAK** and affect the following machine parameters:

| Switch number | Affects |
|---------------|-------------|
| 1 | DFS/NFS |
| 2 | Not used |
| 3 | Disc speed |
| 4 | Disc speed |
| 5 | Auto-Boot |
| 6 | Screen mode |
| 7 | Screen mode |
| 8 | Screen mode |

Full details are as follows:

Switch 1

This switch selects the 'master' filing system within the DNFS ROM (if fitted), ie:

Switch 'OFF' (no link) – machine will start up in DFS.

Switch 'ON' (link fitted) – machine will start up in NFS.

Note: If you are in DFS you cannot use the Econet filing system, and if in NFS you cannot access the disc filing system, without first selecting the other filing system by using the command ***NET** or ***DISC** (or ***DISK**).

The software in DNFS checks to see if the Econet and/or DFS hardware is fitted. If only one of these is fitted DNFS will default to the appropriate filing system regardless of the position of switch 1. If neither is fitted the computer defaults to the cassette filing system.

Switch 2

This is not used at present, but is reserved for future expansion.

Switches 3 and 4

These control the 'step', 'settle' and 'head load' times allowed by the BBC Microcomputer when controlling disc drives. It is very important to set these correctly for the type of drive used to ensure maximum efficiency from both the drives and the overall system (eg Z80 Second Processor running CP/M, Econet level 2 file servers). The table below details those drives tested by Acorn and

the recommended switch settings. Timing information is also given so that the ideal setting for other drives may be ascertained from the manufacturers' data. If you are in doubt about the setting for a drive not listed below, please contact either the supplier or the drive manufacturer.

| Switch setting | | Step (mS) | Settle (mS) | Head load time (mS) | Drives |
|----------------|-----|-----------|-------------|---------------------|--|
| 3 | 4 | | | | |
| OFF | OFF | 24 | 20 | 64 | Olivetti FD501 (40 track) |
| OFF | ON | 6 | 16 | 56 | Shugart SA405 (40 track) Tandon TMS100-1 (40 track) |
| ON | OFF | 6 | 16 | 0 | Teac FD55A (40 track, half height) |
| ON | ON | 4 | 16 | 0 | Mitsubishi M4853 (80 track, half height) |

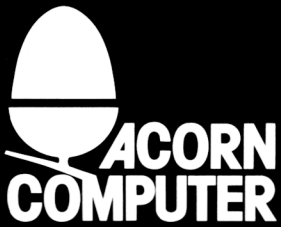
Switch 5

This provides an 'Auto-Boot' function. If a machine is powered up, or the **BREAK** key is pressed with this switch ON, the computer will try to find and execute a **!BOOT** file in the currently selected filing system. For fuller details, see the *Disc Filing System User Guide*.

Switches 6, 7 and 8

These switches set the default screen mode of the computer. The table below details the mode obtained when various switches are set.

| Switch number | | | Screen mode |
|---------------|-----|-----|-------------|
| 6 | 7 | 8 | |
| OFF | OFF | OFF | 7 |
| OFF | OFF | ON | 6 |
| OFF | ON | OFF | 5 |
| OFF | ON | ON | 4 |
| ON | OFF | OFF | 3 |
| ON | OFF | ON | 2 |
| ON | ON | OFF | 1 |
| ON | ON | ON | 0 |



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