



CORPORATION CONTROLLERS

The BBC computers incorporate a flexible method of expansion to include disk drives. As Acorn has supplied details of both the DOS — which it calls a Disk Filing System (DFS) — and the disk controller to many disk drive suppliers, a number of different disk drives are available that are compatible with the BBC Micro.

At present the disk drives compatible with the BBC Micro are virtually all standard 5¼in mini-floppies, ranging in price from around £250 for the smallest-capacity single drive to £600 for the largest-capacity double drives, but 8in drives are becoming available. Unfortunately, DFS is not fitted as standard on the BBC computers and it must be purchased separately from Acorn for about £80. It is supplied in the form of a ROM chip that is fitted in a socket on the computer's PCB. Other manufacturers offer alternative DFS chips for a little less than Acorn, but the cheapest disk system requires an outlay of about £300.

Because DFS is contained in ROM, most disk commands do not require internal memory to carry out instructions. DFS is extended by commands and routines supplied as 'utilities' on a disk that comes with the drive. These are particular to the disk drive being used and relate to formatting and verification.

Disk drives are attached via ribbon cable to a 34-way connector (marked 'Disk Drive') on the

underside of the computer. This cable carries all disk data to and from both double and single drives. Control of disk drives is exercised via an 8271 disk controller chip that converts eight-bit parallel data from the computer to serial form for output to the selected drive, and vice versa. Four standards of format are supported: 40-track or 80-track single-sided and 40- or 80-track double-sided, all at single density. Each track is divided into 10 sectors, containing 256 bytes each and giving a total capacity of approximately 100 Kbytes per side on a 40-track format and 200 Kbytes per side for 80-track.

Drives are identified by number, where a single drive is 0 and a second drive is 1. In the case of drives that use both sides of a disk, the two sides are treated as separate drives, numbered 0 and 2. A second drive numbers its two sides 1 and 3.

Each disk (or side) catalogue takes up two Kbytes and is contained in the first two sectors of the first track. The catalogue holds information about the disk name and identifiers and can be divided into as many as 27 separate selectable directories containing lists of the files that they account for so that files can be stored by category. No Block Availability Map (BAM) is held; instead there is a *COMPACT command that locates any gaps left by deleted files and rearranges the storage of files into consecutive order, leaving all free space after the end of the last file.

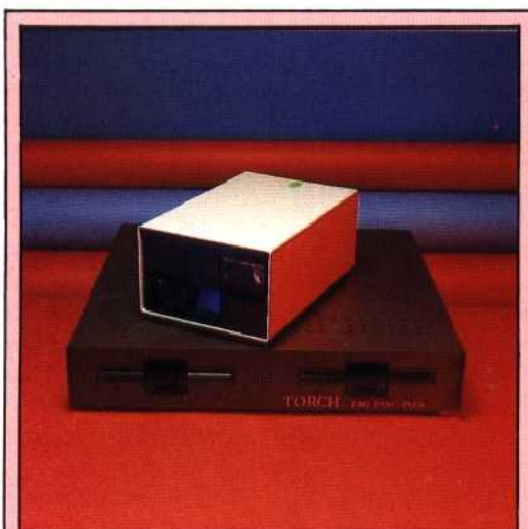
Program and data files can be saved to disk in the same manner as to tape. In fact, with DFS all cassette-handling commands are automatically routed to disk from power-up. To use a cassette, with DFS fitted, enter RETURN — *TAPE. To reassign to disk enter the command: RETURN — *DISK. In addition to the standard file-handling commands DFS provides many advanced data-handling commands and routines, including a sophisticated random access filing system, HELP commands and error messages.

Like the excellent BBC BASIC, DFS is a powerful device for manipulating data. Many routines usually considered beyond the scope of home computer Disk Operation Systems are included and they are, moreover, easy to use. Efficient disk management is encouraged by the structure of the system and data transfer is fast. Figures vary from manufacturer to manufacturer but on average it takes about five seconds to load a 20 Kbyte program file. The drawback of the system, apart from its relatively high cost, is that DFS can store only 31 file names per disk side. Bearing in mind the possible capacity of 200 Kbytes per side and the highly flexible directory system, this is a real limitation.



Lord Of The Strings

The Hobbit is a dedicated floppy tape system designed for the BBC Micro. Being completely under software control all wind, rewind, play and record functions are performed automatically



BBC Disk Drives

To get the most from the BBC Micro a disk drive is essential. The two illustrated here are among the most popular for the Model B — the Acorn 100 and the Torch Z80. Before either can be used they must first be interfaced with the computer via Disk Operating System ROMs, which have to be installed inside the machine

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