DISK DOCTOR

DISK. DOCTOR allows you to examine, change or 'repair1 Spectrum Plus 3 disks. Many of the functions of the program can also be used with disks created by an Amstrad CPC, or with 180k disks created by an Amstrad PCW computer. To load the program type LOAD"DOCTOR" and press Enter.

DISK AND FILE STRUCTURE

The data on the disks is recorded in circular TRACKS. Plus 3 disks have 40 tracks {as do CPC and 130k PCW disks). The tracks on a Plus 3 disk are numbered from 0 to 39, and each track is divided into 9 SECTORS (number 0 to 8).

Each sector contains 522 bytes of information, which may be divided into four RECORDS of 128 bytes each - all files are an exact number of records long. The total capacity of one side of a disk is 40 tracks times 9 sectors times 512 bytes, i.e. 180k, however when you catalogue a blank disk you will find that there is less space available (usually 174k) because part of the disk is used to store disk information. The reserved region usually consists of one or two empty tracks (which may be used for a boot program) and the DIRECTORY.

DIRECTORY STRUCTURE

The disk directory is usually found right at the beginning of the disk, on track 0, track 1, or track 2.
Plus 3 disks have the directory on track 1, PCW disks and CPC System disks have the directory on track 2, and CPC Data disks have the directory on track 1,

The directory contains *64* slots each 32 bytes long, a total of 2048 bytes, or 2k. Every file saved to the disk has its name recorded in at least one of these slots. The information within a slot is organised as follows:

Byte 0 - User Area

All files can be given a User Number from 0 to 15. If no number is specified, then the default is 0. If the value stored in this byte is 229 (hex E5) then this indicates that the file is DELETED.

Bytes 1 lo 11 - File Name

File names can be of up to eighi characters plus a three character suffix (which is usually used to indicate the file type). Both parts of the name are, if necessary, padded out to the full length with spaces. The top bit (bit 7) of each byte is also used to show file attributes such as System, or Read-Only.

Byte 12 - Extent Number

Files longer than 16k appear more than once in the directory. The Extent Number indicates how many other entries in the directory have already been used for this file. For files of 16k or less this will always be set to 0.

Byte 15 - Records

This byte indicates the length of the file, in records. If the file length is greater than 16k then this byte will contain 128 (hex 80), except in the directory entry for the last extent.

Bytes 16 to 31 - Block Numbers

These bytes contain a list of 1k blocks on the disk occupied by the file. The blocks are numbered starting from 0, which is the directory.

MAIN MENU OPTIONS

1	**EXIT**	This option allows you to exit from DISK DOCTOR to Plus 3 Basic.
2	**LOGIN DISK**	It is advisable to select this option whenever you insert a disk which is to be accessed by DISK DOCTOR - and it is essential if you are working with CPC or PCW disks.
3	**DISK STATS**	This displays disk statistics - the number of tracks, sectors per track, records per sector etc - plus the free space on the disk and how many unused tracks are available below the directory.
4	**DIRECTORY**	The directory option leads to a sub-menu with six further options: 1. **Exit to Main Menu** 2. **Save Directory Copy:** this saves a copy of the disk directory in one of the empty tracks below the directory. This cannot be used on CPC Data disks because there are no empty tracks below the directory. Saving a corn of (he directory rnakos il mort? likely that you will be able to recover data from a disk on which the directory has become

		corrupted. 3. **Restore Directory Copy:** this rewrites the directory from a copy you have previously made, Of course, any changes made to the directory since it was lasted saved will not be recorded. 4. **Directory:** the files in the directory are listed. 5. **Select Drive:** you can examine files on the disk in drive A, or stored in the Ram Disk (drive M). Some features of DISK DOCTOR are not applicable to the Ram Disk, and if selected will generate an error message. 6. **Select User:** the User defaults to 0. which is the number recorded in almost all files. Some files (e.g. PCW Locoscript files) have a different user number, and to catalogue and examine these you must first specify the appropriate user number.
5	**FILE INFO**	This option allows you to find out information about files. First select the file - use the cursor keys to highlight the required file - then press Enter. The name, size, and user area of the file are displayed, also whether it is System/Read-Only or Archived. Below is shown a disk map indicating where on the disk the file is stored. If the file has a Plus 3 DOS header, the header information is decoded and displayed.
6	**EDIT FILE**	You can view or change the contents *of* files (make sure that the disk is not write-protected if you wish to make changes). There are three sub-options, **Exit to Main Menu**, **Get File** (which enables you to choose the file you wish to edit), and **Edit Disk** which treats the whole of the current drive (A or M) as a file which you can edit. If you choose the second option and select a file you then are offered the opportunity of exiting, editing the file, or selecting a different file. When you are edit files the data is displayed 256 bytes at a time both as hex values and as ASCII characters (non-printable characters are shown as "."). On the left is shown the position (in hex) of the current screen in relation to the start of the file. Press H or A to edit the file data as either hex or ASCII - move around the screen using the cursor keys or Enter, then press the Edit key when you have finished making changes on the current screen. If you wish to save the changes you have made, press S before quitting or moving to another page. Press N or P to step forwards or backwards through the file, or Q to quit editing (only those changes saved using S will be written to disk).
7	**EDIT DIRECTORY**	DISK DOCTOR allows you to edit directory entries. First select the file you wish to change, then you can rename it. delete it, change the user number (in the range 0 to 15), or change flag settings (to set or remove System/Read Only or Archive status on a file).
8	**UNERASE FILE**	This option allows you to attempt to recover a file deleted in error. File recovery may not be possible if the disk has been written to since the file was deleted, as the area of the disk used by the file may have been overwritten. In this case the program will identify this, and tell you which file has overwritten it. If you cannot recover a file because it has been overwritten, check to see whether there are any other deleted entries for the same file in the directory - there may be a slightly older version of the file which remains intact.
9	**DISK FIX**	This option can be used to check out disks which appear to have become corrupted, and in the case of Plus 3 disks it allows you to rewrite the disk, eliminating any 'soft' errors (if the disk itself is faulty then it is unlikely that you will be able to rewrite it successfully). The suboptions are: 1. **Exit to Main Menu** 2. **Check Disk:** the disk is read track by track, and any errors are reported. 3. **Fix Disk:** the tracks are read one by one, and if a track is found to be faulty as much data as possible is read from it before reformatting the track (in Plus 3 format) and rewriting it with the data. This enables the disk to be copied successfully although part or the data may be corrupted or missing. This option cannot be used except with Plus 3 disks, 4. **Format disk:** the disk is reformatted - this will destroy any information

		on the disk. This option allows you to reformat certain disks which Basic will not format, as a result of a 'No Data" error on track Û.

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