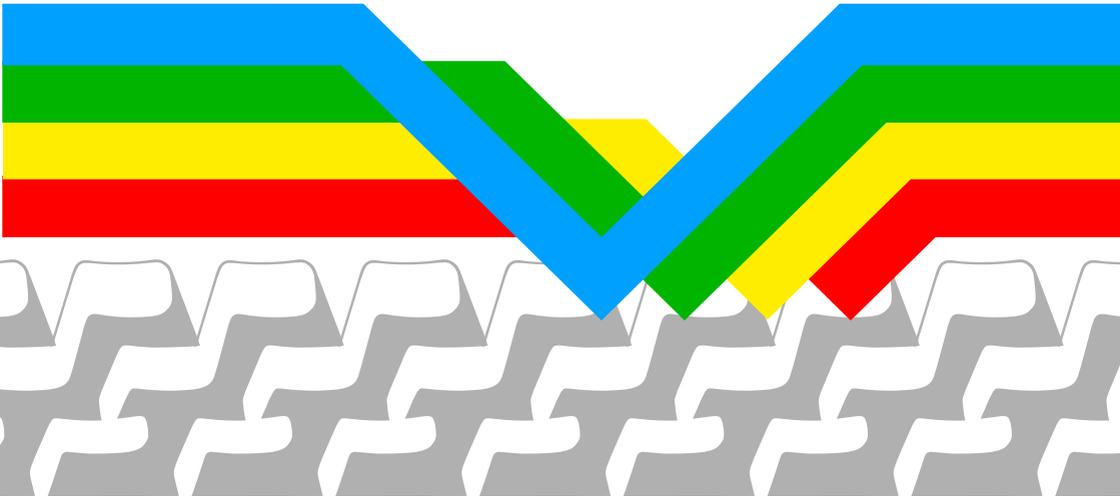Precision
Software

**Disk Software**

# *Super* DISKDOC

## Integrated Disk Utility Toolkit
## for your
## Commodore Computer

- *Direct disk editing*
- *Recover lost data*
- *Works with almost any Commodore system*

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*First Edition March 1986*

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# USER GUIDE

## Loading the Program

Switch on your computer and other devices, and insert the Super Diskdoc program disk in the disk drive (drive 0 of a dual drive unit). Type the following:

        LOAD "SDD",8    <Return>

When the screen shows the "ready" prompt, type:

        RUN    <Return>

Users of computers which support versions of BASIC 4 may use the SHIFT / RUN key combination to load and run the program. Autobooting on the C128 is not available.

## The Start Up Screen

The start up screen requires you to define a set of parameters for the session. Some of these can be redefined from the main menu once the session has started.

The five selections are presented with an 'x' below each one. These characters change as you define the options you want. The options for the disk unit are presented first on the menu line:

        8-Unit 9-Unit A-Unit B-Unit

The last two choices represent the disk unit device number with the hexadecimal equivalents of 10 and 11 respectively. To make your selection, use the cursor right and left arrows to highlight the one you want, and press Return. Disk units are usually device 8. When you press Return, the selected device number is displayed below the "Unit" heading.

Throughout the selection process, you can return to any previously selected set of options by pressing the Escape key (or F3 on the C64). You may then change your selection.

The second set of options is for disk drive number:

        0-Drive 1-Drive

Select an option as above. Single drive units are always 0-Drive.

The third set of options is for printer device:

        4-Printer 5-Printer Centronics

The Centronics option is only valid for C64 and C128 computers. The printer is normally selected as device 4, the 4-Printer option. On BASIC 4 systems, the secondary address is set to 0, on other systems it is set to 7. You may have to adjust your printer accordingly.

*1*

The fourth set of options is for type of printer output code:

**CBM-code  Ascii-code**

Select the first option if you have a Commodore printer, the second option for any other printer or a Commodore printer that has been set to accept ASCII codes.

The last set of options allows you to set printer linefeed on or off:

**No-linefeed  Auto-linefeed**

When you have made the fifth selection, the message "Processing" appears on the top line of the screen. Super Diskdoc attempts to open a channel to the disk and initialize it. If there is an error in the directory or block availability map, this may fail. (Solution: use another disk with the same id. Disable auto-initialization on the main menu with Init -- see command description -- then switch disks without doing Change, and you may be able to remove the error.)

If Super Diskdoc initializes the disk successfully, it then tries to determine the type of disk unit. It does this by referring to a table of tracks and sectors for each type of unit. If the disk drive is not compatible with a known type, Super Diskdoc may continue to work, but certain operations, such as sequential sector reading, may not work properly. When the disk type is identified, Super Diskdoc knows the locations of the directory, block availability map, and disk header information, as well as the number of tracks and sectors.

Finally, Super Diskdoc gets the disk name and id, and shows the main system menu and data buffer displays.

## The Main Screen Display

Super Diskdoc's main display consists of a number of menu and status lines at the top of the screen, the exact number depending on whether the screen is 80 or 40 column, and two data buffer displays.

*Menus*

The top one or two lines of the screen display Super Diskdoc's commands in "duckshoot" menu form. Any command may be selected either by using the cursor keys to highlight it and then pressing Return, or by typing the initial letter of the command, in which case execution of the command is instantaneous.

The next line down displays menu help messages. Each menu command has its associated explanation, which is displayed when the command is highlighted.

*Status Lines*

The first two status lines, after the menu help line, show information about the sector on the disk to which Super Diskdoc is currently pointing. This is not always the same as the sector whose contents are displayed on screen.

The first of the two lines indicates the current track, sector, disk drive and unit, in decimal. The second of the two lines shows the same track and sector information in hexadecimal, with leading '$' characters. On the same line, the next and last sectors in the sector log are shown in hexadecimal.

The next line shows the current disk name and id.

The last of the status lines shows track, sector, disk drive and unit information in decimal on the sector whose contents appear below.

The information on the last line differs from that on the first of the status lines when you have selected another track, sector, drive or unit, but have not yet read it.

*Data Buffer Displays*

There are two displays, which show the same data in different forms. The left hand display shows the 256 bytes of the most recently read sector in hexadecimal form. The right hand display shows the same 256 bytes in ASCII form. The displays may be edited. Changes to one show up instantaneously in the other, translated from hex to ASCII or vice versa.

# 40 Column Display

When the screen is only 40 columns wide, Super Diskdoc extends the main menu onto the second line of the screen. The menu help and the elements of the status lines remain the same, but adapted to the smaller display.

The data buffer displays are different. They show only half as much data as in the 80 column display. Each display is only eight columns across instead of 16, and although there are still 16 rows, the last row reaches only to the 128th byte of the sector. You can, however, display the second half of the buffer, bytes 129 to 256, by pressing the '+' key -- a command on the main menu. The '-' key returns to the first half of the buffer. Repeated use of '+' or '-' reads adjacent sectors.

The main effect of 40 column display on the functioning of the system is on the Hunt command. When it finds a character string in the second half of a sector, the display is offset from the start of the buffer so that the string is visible. This means that the first two bytes in the display are not the first two bytes of the sector; the importance of these bytes is explained below.

## Action Keys

The following keys have special purposes in Super Diskdoc:

*Cursor left/right*          Select menu options; control editing

*Return*                     Select or execute option

*Stop*                       Interrupt execution

*Esc*                        Exit from menu or prompt

*Fl/F3*                      C64 equivalents for Return and Esc

*Back arrow*                 Make  the  cursor  jump  from  hex  to
                             ASCII display and back

## How to Use Super Diskdoc

Super Diskdoc is a toolkit with a very specific set of purposes. It is intended for users who either already know how data is stored on a Commodore formatted disk, or are prepared to learn. Moreover, we assume that you know why you purchased the program and what you want to do with it. For this reason, we have not provided any tutorials in its use. Nevertheless, it may save time for some users if they go through the three short examples of how to use Super Diskdoc that follow.

*Examining a File*

Start at the main menu. Select the Disk Log Display command, which shows a list of all the files in the disk directory, with the starting track and sector for each.

Choose a file. Now select the File Find command, and type in the name of the chosen file. Super Diskdoc reads through the directory and, if it finds the file name, shows the directory details for it. Press Return. You will see the first sector of the chosen file in the data buffer displays, in both hex and ASCII.

Now select File Chain Display. This produces a list of all the linked sectors that comprise the chosen file, shown by track and sector in hex. It also tells you how many sectors are in the chain.

At the end of the display you press Return to get back to the main menu. You will see the last sector in the chain displayed. Notice that part of the display consists of characters with reverse space highlighting between them. As this is the last sector in the file, only the first part of the sector actually belongs to the file. The rest of it, the highlighted part, is either empty or garbage left over from a file that used this sector and was then deleted.

The first two bytes of every sector have special significance. In a sector which is part of a chain that comprises a file, they point to the track and sector numbers for the next sector in the chain. The first byte points to the track, and the second byte points to the sector in that track -- in hexadecimal notation, of course. Sectors belonging to files that have been deleted are not distinguishable from active sectors, as the operating system alters only the directory and the Block Availability Map when you scratch a file.

In a sector which is the last in a chain, such as the one you have just looked at, the first byte is 00, and the second byte points to the last valid byte in the sector.

Once Super Diskdoc has read a chain of sectors, it remembers them. You can use the Last and Next commands to move in either direction along the chain. If you want to return to the beginning of the chain, use the File Start command.

Finally, use the Interpret command to provide a translation of the data. The main menu Interpret looks at the current data buffer only, while the File Interpret looks at the entire chain. You can choose to interpret the data as text, BASIC, assembler, or screen code. Super Diskdoc translates as accurately as possible into the mode of your choice.

If you want, you can edit any part of any sector and replace it on the disk. We suggest you gain a little experience before you start on this.


*Changing a Directory Entry*

Making changes to the directory is one way to rename files. First you must position to the beginning of the disk directory track. You can do this with the Disk Go Directory command. The track and sector indicators display the directory track and sector numbers, and the first sector of the directory appears in the data buffer display.

Now select the Edit command. The cursor appears in the left hand data buffer, and you can move it with the normal cursor control keys.

Move into the right hand ASCII buffer by pressing the back arrow. Now you can type any key on the keyboard, making changes to the names of files. Try this out on one of your own files. As you type characters in the ASCII buffer, the hex equivalent appears in the corresponding position in the hex buffer. All changes are shown in reverse video until you return to the menu.

You could make a directory entry unreadable by including cursor left and space characters in the name, or even the clear screen control character. If you put a non-printing control character in a file name, users will not be able to see it in a normal directory display, and so won't be able to type it correctly or load the file. You can also fix any file names that begin with two double quotes.

Leave the Edit function by pressing Return. The changes you have made are not stored on the disk at this point.

Now, make yourself a printout of the buffers by selecting the main menu Print command.

Finally, if you want to make any editing changes permanent, you can use the Write command to place the sector you were working on back on the disk. If you select a different track and sector first, the buffer will be written to that track and sector -- so be careful out there.

*Recovering Damaged Files*

Super Diskdoc can recover many corrupted files, but obviously there can be no guarantees as there may be physical damage which renders the disk surface literally unreadable.

Suppose you have a file that contains a read error. First, get a printout of as much of the sector chain as you can. Then, use the main menu Hunt command to locate a sector of the file following and as near as possible to the sector in which the error occurs. Alternatively, you can try to establish the pattern of sector allocation which the disk drive follows by looking at the distribution of sectors in existing files, preferably ones that occupy previously unused tracks. The pattern may help you to predict the sector that comes after the damaged one.

When you have located the next undamaged sector, make a note of the track and sector numbers. Return to the last undamaged sector before the error, and edit it, changing the first two bytes so that they link to the sector after the damaged one. Write the edits to the disk.

Now, when you chain through the file, or access it with an application such as word processing, the damaged sector will be skipped. It would be prudent to move the file to a new disk before trying to restore the skipped data.

Note that this technique is intended for sequential and program files. It could have catastrophic effects on a non-standard file such as a Superbase database, which if damaged should be processed with the special utility available with Superbase Version 2.

*Data Checksum Error*

It is possible to overcome this error by making use of the Disk Memory Read command. When the DOS encounters error 23, the data checksum error, it informs you of the fact after it has already read the data from the disk. The data is held in the disk buffer at a certain address. Super Diskdoc allows you to read the data in from the disk, change it if necessary, and replace it on the disk with a newly computed checksum.

The Disk Memory Read command requests a disk memory address. There are several possible addresses, and they vary from disk unit to disk unit. The addresses for the 1541, 1570, and 1571 are:

        $300
        $400
        $500
        $600
        $700

You should enter one of these and see whether the data from the disk memory comes from the damaged sector. When you have the damaged sector in the buffer, you can either edit it if you can see

the erroneous byte (e.g. the wrong character in a word), or write
it out to its original location unchanged. In either case, the DOS
will compute a new checksum for the sector based on its actual
contents.

The disk memory addresses for the 4040, SFD 1001, and 8250/8050
are:

```
        $1100      $2000      $3000      $4000
        $1200      $2100      $3100      $4100
        $1300      $2200      $3200      $4200
                   $2300      $3300      $4300
```

# Errors

Super Diskdoc error messages occur in response to commands. Each command description in the next section contains an explanation of any error messages you may encounter while using it.

The only general error messages not covered in specific command descriptions are:

> *Invalid Hexadecimal Number*

> *End of File Links*

The former is self-explanatory (hex numbers must begin with a dollar sign and use the characters 0 to 9 and A to F), and the latter indicates that Super Diskdoc has reached the end of the file you are chaining through.

Many Super Diskdoc error mesages are in fact Commodore DOS error messages, which you will recognize from their format of XX,message,XX,XX. You should refer to your Commodore manuals for explanations of these messages.

Likewise, a message of the form *System Kernal Error No X* should be looked up in your user reference manuals.

Super Diskdoc always returns to the most recent correctly read previous track and sector if it encounters an error while trying to read a new track or sector, or switch to another drive or unit.

# Don't!

*1. Don't change disks without using the Disk Change command.*

*2. Don't use the Disk Memory Write command to write to the disk drive's memory unless you're sure you know what you're doing.*

*3. Don't use the main menu Write command, which places the contents of the current data buffer display on the disk at the track and sector specified on the first status line, unless you're sure you know what you're doing.*

*4. Don't use the Disk Sort command to sort the disk directory unless you have an up to date backup of the disk.*

# MENU COMMANDS

## The Main Menu

**Disk File Track Sector Read Write Edit Print Next Last Interpret Quit + - < > $**

This is the main Super Diskdoc menu. It appears at the top of the screen whenever Super Diskdoc is ready to accept a new command. To execute a command use the cursor control keys to highlight it and then press Return. Some main menu commands display a submenu. Use exactly the same method to select a command from a submenu. Once you know the command you want you may omit the cursor movement step by pressing the initial letter of the command. With this method the command is executed immediately so there is no need to press Return.

## The Disk Command Submenu

**Disk**      *Menu for disk utilities*

**Drive Unit Bam Report Change Log Hunt Memory Sort Go Init Name Validate**

Use these commands to select the disk drive you wish to work with and for performing functions related to the whole disk.

**Drive**     *Select drive number*

You can select drive 0 or 1 of a dual drive unit with this command. Super Diskdoc prompts **0-Drive 1-Drive.** Enter '0' or Return for drive 0, or '1' for drive 1.

If you select a drive that physically doesn't exist, commands accessing the disk may produce the error message "*74,Drive not ready*". Reselecting drive 0 will usually correct this problem as drive 0 exists on most units.

**Unit**      *Select unit number*

Use this command to select your disk unit or to change its device number. The submenu options are **8-Unit 9-Unit A-Unit B-unit Change.** Select the unit or device number you require by entering 8, 9, A or B. These refer to the unit number in hexadecimal, i.e. 8, 9, 10 and 11.

If you select a unit that does not exist you will get a warning message "*System Kernal Error No 5*". Reselect a valid unit before trying to use any other commands.

The change option may be used to alter the device number of the unit currently selected to any other device number. Super Diskdoc prompts **Enter New Device Number.** Enter the new device number you require and press Return.

When Super Diskdoc selects a unit it attempts to determine the unit type from an internal table of CBM disk types. The table supports the following disks at present: 2031, 4040, 8050, 8250, SFD1001, 9060, 9090, ST10C, 1541, 1551, 1570, 1571.

If the disk type being used is not recognized then Super Diskdoc does not know where to find the Directory, Bam or Header of the disk or how many sectors there are on each track. Consequently certain functions of Super Diskdoc cannot operate correctly.

**Bam**  *Block availability map functions*

The **Bam** submenu is **Display Print Allocate Free Check.**

The block availability map (BAM) functions allow you to see which sectors are in use on a disk or to change the allocation state of a sector.

**Display** or **Print** shows the BAM on screen or printer with the track number first followed by up to 32 characters showing the state of each sector. The character '*' signifies that a sector is in use, while '-' signifies that a sector is unused or free. Output is in two columns on 80 column devices.

Use **Allocate** to mark the current sector as being used in the BAM. If the sector is already marked as in use then you will see the message "*65,no block,TT,SS*" where TT and SS are the next highest available track and sector respectively.

Use **Free** to mark the current sector as unused in the BAM. No message is given even if the sector is already marked as unused.

**Check** may be used to determine the allocation state of the current sector without looking at the BAM. Super Diskdoc displays either "*Sector is allocated*" or "*Sector is not allocated*".

**Report**  *Read and report on all sectors*

Use report to check a whole disk for errors.

Super Diskdoc shows the output submenu **Display Print**. Select Return or d for output to the screen or p for a printout.

Each sector of the disk is read by the disk drive. As each track is accessed the track number is printed in

hexadecimal. If all sectors on the track can be read Super Diskdoc prints "*o.k.*" If any errors are encountered then they are printed together with the total number of errors on the track. After all sectors of the disk have been read the total number of errors for the disk is shown.

**Change**       *Change current disk*

Use this command before changing the disk in the currently selected drive. Super Diskdoc prompts you to insert the new disk and press Return.

**CAUTION:** *Failure to use this command when swapping disks may produce the error message "29,disk id mismatch". This is due to the fact that Super Diskdoc keeps a file open to the current disk at all times.* **Change** *closes the file before you take the disk out.*

**Log**       *Disk directory log*

Use this command to show an extended directory of the disk.

Super Diskdoc shows the output submenu **Display Print**. Select Return or d for output to the screen or p for a printout.

The extended directory shows a list of the files on the disk. Each entry gives you the size of the file in blocks followed by the file name. The file type is shown next and then the track and sector of the first block in the file (in hexadecimal). If the file is a program type the start address is shown next both in hexadecimal and in decimal.

Relative files show 'SS' followed by the track and sector of the first side sector (in hexadecimal). The record length (in decimal) is also shown preceded by an 'L'.

An asterisk to the left of the file type means that the file has not been closed properly.

A '>' symbol to the right of the file type means that the file has been locked (protected against deletion. See file lock).

In the unlikely event that the replacement track and sector are non-zero they are displayed preceded by an '@' symbol.

**Hunt**       *Search disk for data*

Use this command to search the disk for occurrences of a
string of characters from the current sector onwards.

Super Diskdoc shows the output submenu **Display Print.**
Select Return or d to display each string location on the
screen or p for a printout of all locations.

The current buffer display is cleared to all zeroes and
the cursor placed in the first position. Immediately above
the buffer display, Super Diskdoc prompts you to **Enter
Search Data.** You may enter any string of characters in
either hex or ASCII (see the **Edit** option for details). To
exit from **Hunt** press Return with no character string
selected.

The '?' character is treated as a wild card and matches
any character including a space.

If a partial match is found at the end of a sector, i.e.
the sector ends before the match is complete, the next
linked sector is scanned to determine if the match is
valid. Note: this is in contrast with the normal
sequential search order of a disk hunt.

When a match is found the buffer is displayed with the
string highlighted in reverse field. If the display option
has been chosen, you are prompted **Continue Abandon.** Select
Return or c to continue or a to abandon the **Hunt.**

To abort a **Hunt** which is in progress, use the Run/Stop
key.


**Memory**     *Examine disk memory*

Use this command to examine or change data held in the
disk unit's memory.

Super Diskdoc displays the **Memory** submenu **Read Write
Modify.**

Select Return or r to read 256 bytes from the disk memory.
Super Diskdoc prompts **Enter disk memory address.** Enter the
address (in decimal -- to enter an address in hexadecimal
precede it with a dollar sign) of the memory you wish to
read. 256 bytes of the disk memory are displayed on
screen. You may then **Edit, Print** or otherwise manipulate
this data.

Press w to write 256 bytes to the disk memory. Super
Diskdoc prompts **Enter disk memory address.** Enter the
address of the disk memory to which you wish to write the
current buffer.

Press m to modify a single byte of the disk unit's memory. Super Diskdoc prompts **Enter disk memory address.** Enter the address of the disk memory byte you wish to modify. Super Diskdoc displays the current contents of the selected byte and prompts **Enter data byte.** Respond with the value you wish to store at the selected memory location. If the byte is stored successfully then the address is incremented and the value of the next location displayed. You may continue to enter values to be stored in the disk's memory or simply press Return to exit this option.

When writing to disk memory Super Diskdoc stores each byte and verifies it by reading the location again. If the location fails to verify, the error message "*Memory Write Failed*" is displayed. The usual cause of this is attempting to write to the disk unit's ROM (Read Only Memory).

**Sort**       *Sort disk directory*

Use this command to sort your disk directory by filename or by file type.

Super Diskdoc displays the submenu **Names Types.** To sort the directory by filename press Return or n, to sort by file type press t. In either case Super Diskdoc prompts you with the confirmation submenu: **Proceed Abandon.** To store the sorted directory on disk press Return or p. To Abandon this option press a.

Before sorting your disk directory ensure you have a backup of the disk as any errors occurring during the write of the disk directory may cause it to become unreadable.

Super Diskdoc is unable to sort the disk directory if there are more than 255 filenames in the directory. If there are more than 255 filenames in a directory, the error message "*Too Many Files in Directory*" is displayed.

**Go**         *Goto Directory, BAM or Header*

Use this command to select and read the first sector of the disk directory, BAM or header.

Super Diskdoc displays the submenu **Directory Bam Header.** When you select d, b or m the appropriate sector is read and displayed. The track and sector display shows which disk sector has been read.

**Init**      *Initialize disk*

>    Use this command to select or deselect auto-initialization. The default setting is auto-initialization on.
>
>    Super Diskdoc displays the submenu **Yes No.** Press Return or y to select or n to deselect auto-initialization.
>
>    When a disk unit is accessed for the first time, Super Diskdoc sends the 'initialize' command to the selected drive. This ensures that the disk id is known to the drive and should prevent disk id mismatch errors. Under certain circumstances, for example errors in the disk BAM, it may be useful to turn off this feature.

**Name**      *Change disk name*

>    Use this command to change the name of your disk.
>
>    Super Diskdoc prompts **Enter new disk name** and displays the existing disk name. You can delete the existing name with Esc or f3 as appropriate, or edit the name. When you are happy with the new disk name, press Return to store the disk name.

**Validate** *Validate the disk BAM*

>    Use this command to validate and collect the disk. After a disk has been in use for some time, the directory can become disorganized. Validate recreates the disk BAM to ensure its validity, freeing up sectors not in use in the process.
>
>    Super Diskdoc displays the confirmation submenu **Proceed Abandon.** To validate your disk press Return or p. To abandon, press a.

## The File Command Submenu

File      Menu for file utilities

**Find Chain Start Hunt Lock Unlock Recover Interpret Verify Display**

>    Use these commands to perform functions on individual disk files.

**Find**      *Find start of file*

>    Use this command to find the start of a specified file. Super Diskdoc prompts **Enter file name.** Enter the name of

the file you wish to find and press Return. Pattern matching may be used in filenames. If the file is found information about the file (in disk log format) is displayed and Super Diskdoc prompts **Press Return to continue.** Pressing Return causes the first sector of the specified file to be read and displayed. Pressing Esc or f3 leaves selected the directory sector in which the filename is to be found. To display this sector select **Read.**

If Super Diskdoc cannot find the filename, the error message "*File Not Found*" is displayed.

**Chain**      *Follow file chain*

Use this command to list all the sectors belonging to a particular file.

Super Diskdoc shows the output submenu **Display Print.** Select Return or d for output to the screen or p for a printout.

Sectors that make up a program or data file are linked by means of the first two bytes. Starting at the current sector, the link bytes at the beginning of the sector are used to determine whether the sector is linked to any other. If the first byte is non-zero then the link bytes are used to select and read the next sector in the chain. As each sector is read its track and sector numbers are shown in hexadecimal. The sequence ends when the first byte of the current sector is zero. The total number of sectors read in the chain is then shown.

**Start**      *Goto start of last file found*

Use this command to return to the first sector of the file last found using the File Find command. This command is invalid until the File Find command has been used.

**Hunt**       *Search file for data*

Use this command to search the file for occurrences of a string of characters from the current sector onwards.

Super Diskdoc shows the output submenu **Display Print.** Select Return or d to display each string location on the screen or p for a printout of all locations.

The current buffer display is cleared to all zeroes and the cursor placed in the first position. Immediately above the buffer display, Super Diskdoc prompts you to **Enter Search Data.** You may enter any string of characters in

either hex or ASCII (see the Edit option for details). To exit from Hunt press Return with no character string selected.

The '?' character is treated as a wild card and matches any character including a space.

If a partial match is found at the end of a sector, i.e. the sector ends before the match is complete, the next linked sector is scanned to determine whether the match is valid.

When a match is found the buffer is displayed with the string highlighted in reverse field. If the display option has been chosen, Super Diskdoc prompts **Continue Abandon.** Select Return or c to continue, or a to abandon the **Hunt.**

To abort a **Hunt** which is in progress, use the Run/Stop key.

**Lock** *Protect file from deletion*

Use this command to lock a file to prevent deletion.

Super Diskdoc prompts **Enter file name.** Enter the name of the file to be locked and press Return. The file is locked and you are returned to the menu. Locked files are marked with the '>' character to the right of the file name on the disk directory.

If the file is already locked, Super Diskdoc displays the error message "*File Already Locked*". If the file cannot be found, the error message "*File Not Found*" is displayed.

**Unlock** *Remove file protection*

Use this command to unlock a previously locked file.

Super Diskdoc prompts **Enter file name.** Enter the name of the file to be unlocked and press Return. The file is unlocked and you are returned to the menu.

If the file is already unlocked, the error message "*File Is Not Locked*" is displayed. If the file cannot be found, the error message "*File Not Found*" is displayed.

**Erase** *Erase file from disk*

Use this command to erase unwanted files and programs from the disk.

Super Diskdoc prompts **Enter file name.** Enter the name of the file you want to erase and press Return. You can use the DOS pattern matching characters with Erase. Super Diskdoc displays the confirmation submenu **Proceed Abandon.** To erase the file press Return or p. To abandon, press a.

If the file is successfully erased, Super Diskdoc displays the DOS "*00,files scratched,01,00*" message.

If the file cannot be found, the error message indicates this by making the last numbers zero: "*00,files scratched,00,00*".

**Recover**       *Recover deleted file*

Use this command to recover a deleted file.

Super Diskdoc prompts **Enter file name.** Enter the name of the file to be recovered and press Return. The directory is searched for the file specified. If the file is found but is not marked as deleted, the error message "*File Is Not Deleted*" is displayed.

If the file has been deleted then each sector in the file is checked against the disk BAM. If any sector is found to be allocated then the recovery is terminated as the sector must be in use by another file. The error message "*Cannot Recover : Sector is in use*" is displayed. If all sectors are found to be free then the count of the number of sectors in the file is checked against the directory entry. If this count proves to be incorrect then the recovery is terminated with the error message "*Cannot Recover : Wrong Block Count*".

If all goes well Super Diskdoc prompts with the recovery menu **Sequential Program User Relative.** You should enter the type of file you are attempting to recover. The directory is updated to reflect the new status of the file and then all the sectors in the file are allocated in the disk BAM.

If the automatic recovery fails you may still be able to recover part of the file by finding the directory entry and simply modifying the file type to be a valid (undeleted) file. Having done this the file then may be read from BASIC. Note that this may result in reading garbage as the file has obviously been disturbed in some manner for the automatic recovery to fail. See your disk drive User's Manual for the directory format.

**Interpret**     *Interpret file data*

Use this command to produce a display of disk data in one of four modes:

**Text Basic Assembler Screen-code**

Select the option you want from this submenu, and Super Diskdoc interprets the current sector as accurately as possible in the chosen mode. If the mode you have chosen does correspond to the form of the data being interpreted, the display will make reasonable sense. If the data is stored in a form that differs from the mode you have chosen, the display may appear to be garbage.

The File Interpret, as opposed to the main menu Interpret command, chains through the file starting with the current buffer. A reverse space highlights the points in the display at which Super Diskdoc starts another block. If the buffer at which the interpretation begins is not the first in the file, there may be apparent errors of interpretation at the beginning, because the first few characters may not make sense without the ones that precede them in the previous sector in the chain. Likewise, in Assembler mode, addresses are only valid if you start the interpretation at the beginning of a file.

The first two bytes in a sector contain pointer information. If the sector is not filled with valid information, the second of these two bytes refers to the last valid byte in the sector. Super Diskdoc shows all the succeeding bytes with reverse space highlighting in between.

**Verify**    *Verify all files against BAM*

The verify command verifies that every file in the disk directory has the same number of blocks as shown in the directory. It also checks that every block in the file is readable and also that the blocks are allocated correctly.

The following error messages may be displayed by this option.

1. "*Wrong block count*"
   The actual number of blocks in the file is different to that shown in the directory. This message is normal when verifying database files created by Superbase but not otherwise. The file data may still be intact.
2. "*Bad file chain*"
   This means that the link bytes joining the different sectors of the file together are invalid at some point in the file. The file is already corrupted and some data may have been lost.

3. "*Not set in BAM TT SS*"
   A sector in the file chain (Track TT Sector SS) is not allocated in the BAM. The file may become corrupted if more data is written to the disk. Collecting the disk may cure the problem but take a backup first.
4. "*File block in conflict with file X*"
   A block in the file has linked to a block already verified as belonging to another file. The file is corrupted and data may have been lost.
5. "*XX,disk error,TT,SS*"
   The DOS error message is displayed if a file sector is unreadable. The file check continues however unless the error was caused by reading the directory.

**Display**    *Read relative file records*

This command allows you to display the contents of any record in a relative file. Super Diskdoc prompts **Enter file name.** Enter the name of the relative file you wish to read and press Return. Super Diskdoc then prompts **Enter record number.** Enter the number of the record you want, and press Return. If it can, Super Diskdoc finds the record and displays it, then returns to prompt for another record number. Press Return to the prompt to exit to the main menu.

If you select a non-relative file, you will see a "*File Type Mismatch*" DOS error message. Entering an invalid record number produces the "*Record Not Present*" DOS error message.

# Other Main Menu Commands

**Track**    *Select track number*

To select a specific track on the disk use this command. Super Diskdoc will prompt **Enter Track Number.** Enter the track you require (in decimal) and press Return. The display will show the track you have selected, but no data is read at this time. To enter the track number in hexadecimal precede it with a dollar sign.

**Sector**    *Select sector number*

To select a specific sector on the disk use this command. Super Diskdoc will prompt **Enter Sector Number.** Enter the sector you require (in decimal) and press Return. The display will show the sector you have selected however no data is read at this time. To enter the sector number in hexadecimal precede it with a dollar sign.

**Read**          *Read selected sector*

Reads a disk sector into the buffer. The sector to be read is the one shown by the track and sector indicators on the status line below the menu help line.

**Write**         *Write current buffer*

Writes the current buffer to the disk. The sector written to is the one shown by the track and sector indicators on the status line below the menu help line. Note: if you have selected a new sector since the buffer was read into memory then the status line indicators will differ from the indicators on the status line above the buffer display. If you go ahead and write the buffer it will be stored back on the disk at a new location. Since writing to the disk could be dangerous Super Diskdoc prompts you with the confirmation submenu: **Proceed Abandon.** Proceed is highlighted so to write the buffer simply press Return. If you have made a mistake or are not sure then press Esc to return to the main menu.

**Edit**          *Edit current buffer*

Allows you to modify the contents of the current buffer by entering hex or ASCII values. The cursor is placed on the first byte in the buffer. The cursor controls may be used to move quickly to the byte required and a counter shows the offset of the byte the cursor is currently on. To change the byte under the cursor simply type in the new hex value. To enter data in ASCII type the back arrow key and the cursor jumps to the ASCII display. To return to entering values in hex type the back arrow key again. When you have finished editing the buffer press Return. No data is stored on disk by this command. To save the buffer you must use the Write command.

**Print**         *Print current buffer*

The current contents of the buffer are output to the selected printer device.

**Next**          *Read next linked sector*

The next track and sector is shown on the display line (in hex) after "Next". This is always set from the first two bytes of the current buffer (the DOS link). Executing Next reads that sector into the buffer.

**Last**       *Read previous sector in list*

Super Diskdoc keeps a log of the last 256 sectors that have been examined. The last one is shown on the display line (in hex) after "Last". The Last command reads this sector and decrements the log index. Executing 'Last' repeatedly scans back through the log of sectors. This may be used to chain backwards through a file.

**Interpret** *Interpret current buffer*

This command functions exactly like the File Interpret command, except that it does not chain through the file. First you select a mode of interpretation from the submenu:

**Text Basic Assembler Screen-code**

Select the option you want from this submenu, and Super Diskdoc interprets the current sector as accurately as possible in the chosen mode. If the mode you have chosen does correspond to the form of the data being interpreted, the display will make reasonable sense. If the data is stored in a form that differs from the modes you have chosen, the display may appear to be garbage.

If the buffer at which the interpretation begins is not the first in the file, there may be apparent errors of interpretation at the beginning, because the first few characters may not make sense without the ones that precede them in the previous sector in the chain. Likewise, in Assembler mode, addresses are only valid if you start the interpretation at the beginning of a file.

The first two bytes in a sector contain pointer information. If the sector is not filled with valid information, the second of these two bytes refers to the last valid byte in the sector. Super Diskdoc shows all the succeeding bytes with reverse space highlighting in between.

**Quit**       *Leave this program*

Use this command to leave Super Diskdoc and return to BASIC.

**+**          *Read next sector*

The next sector (or half sector on 40 column systems) on the disk is read into the buffer. This is the selected sector plus one. If this sector is invalid for the type of disk drive in use then the next sector is sector zero of the next highest track. If this track is invalid then the command does nothing

**-**        *Read previous sector*

The previous sector (or half sector on 40 column systems) on the disk is read into the buffer. This is the selected sector minus one. If this sector is invalid for the type of disk drive in use then the previous sector is the highest numbered sector of the previous track. If this track is invalid then the command does nothing.

**<**        *Read previous track*

The selected track is decremented and a sector (or half sector on 40 column systems) read into the buffer. If this track is invalid for the disk drive type then the command does nothing.

**>**        *Read next track*

The selected track is incremented and a sector (or half sector on 40 column systems) read into the buffer. If this track is invalid for the disk drive type then the command does nothing.

**$**        *Read disk directory*

Use this command to display or print the directory of the selected disk in the standard format.

Super Diskdoc shows the submenu **Display Print.** Select Return or d for screen output, or p for a printout.

# Notes

# *Super* DISKDOC

Super Diskdoc is the only toolkit you'll ever need to keep your Commodore disk system in top shape. Super Diskdoc is a power tool and a precision instrument all in one, and it's a joy to use. You just load it up, pop a disk in your drive, and Super Diskdoc gives you total control. *Here's how:*

- Locate disk errors
- Edit the individual bytes on your disk
- Recover deleted files
- Interpret any data in English, ASCII, or hexadecimal
- Search entire disks for specific characters
- Edit and sort disk directories
- Trace and verify file pointers and chains
- Copy or modify files and blocks of data
- Lock and unlock files for extra security
- Produce detailed printouts of disk contents

Super Diskdoc can't wipe coffee off your disk, but it can correct just about any kind of software error.
If your data has value to you — you need Super Diskdoc. It's the best insurance you can buy!

Works with Commodore 4000, 8000, 700/B128, Plus/4, 64 and 128 computers and the following disk drives:
2031, 4040, 8050, 8250, 1541, 1551, 1570, 1571, 9060, 9090, ST10C, SFD1001 and compatibles.

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