# DI-SECTOR

Version 2.0

# ST★RPOINT SOFTWARE

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# DI-SECTOR VERSION 2.0 INTRODUCTION

Congratulations!  You have just purchased the most powerful Commodore 64 disk access utility yet written.  I hope that you will find Di-Sector enjoyable.  Should you discover any problems or have any suggestions for improvement, please contact Starpoint Software. User feedback is the only way that great programs can get better. Your input will be appreciated.

To make full use of Di-Sector, you must be prepared to read the literature available and to experiment with the possibilities that your new tool opens up to you.  In the event that you need to use one of the more interactive sub-systems of Di-Sector, such as Drive/64 Mon or Reconnaissance you will need to know what you are doing!


## ABOUT DISK DUPLICATION

Di-Sector v2 contains several disk duplication facilities.  Disk copy programs are kind of like a gun, and Di-Sector v2 is  the biggest gun yet.  Di-Sector will allow you to copy almost any disk that is now on the market, however it should only be used to duplicate your LEGALLY PURCHASED PROGRAMS for your own personal use. Software authors deserve their royalties and if people make a habit of ripping off programs instead of buying them, then all the decent programmers will decide that they should find a more profitable profession.  Software piracy hurts the computer industry, so please refrain from using Di-Sector for this purpose.

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## WHAT YOU WILL NEED

Di-Sector requires a Commodore 64, and a 1541 disk drive to operate.  Your package should contain the following:

        Di-Sector Master Diskette
        The Di-Sector documentation
        Di-Sector User Diskette stickers
        Warranty registration card

## GETTING STARTED

The Di-Sector Master disk is not useable as it arrives.  The sole purpose of the Master disk is to create Di-Sector User disks. The User disks will contain the working Di-Sector system.  You will be allowed to make three User disks.  After the three disks have been created, the Master disk has fulfilled its purpose.  The Master disk should not be reused nor thrown away, however, since it may be necessary to return your original Master disk to Starpoint in the future, if you want an upgrade.  Your Master disk should be placed in a very safe location in order to avoid problems later on.

To create a User disk you will need the Di-Sector Master disk and one blank disk.  Turn on the computer and insert the Di-Sector Master disk.  The Di-Sector Master must NOT be write-protected.  Type LOAD "*",8,1 and press <RETURN>.  After a few moments of waiting you should be presented with a copyright notice and a query as to whether you want to continue the creation process or not.  If you choose to

continue the creation process, this will count as one of your three
copies.  There is no way to abort the creation process once it has
started.  As the program is running you will be prompted to insert
your User disk (the one you are creating) and then to reinsert the
Master disk, repeating the process several times.  Follow the
instuctions in the screen prompts accordingly.

## LOADING YOUR USER DISKETTE

After a User disk has been created, you will then be able to
load Di-Sector from that disk.  After turning on your computer in the
normal fashion, insert your User disk, and type LOAD "*",8,1.  After
a few moments the Di-Sector logo will appear and the Di-Sector
Arsenal will continue to load after a few moments, you will be
presented with the main menu to Di-Sector, the Di-Sector Arsenal.

## THE DI-SECTOR ARSENAL

The Di-Sector Arsenal is the main hub of the Di-Sector system.
It is a menu of sub-systems for Di-Sector and from this menu you will
be able to select any of the main sections of Di-Sector.  To select
one of the options just press the key that is associated with that
function.  The Di-Sector User disk should  remain mounted on drive 8
until the sub-system that you have selected has fully loaded.
After pressing the key (A-F), the module will begin loading.

The screen will go blank and the drive will spin.

NOTE:  As the sub-system is loading, you may notice that the little, red, drive activity light does not come on.  This is normal. Many of the Di-Sector modules do not turn the drive light on during disk activity.  Although this may seem unusual, you should not be alarmed.

## NIBBLE BACKUP

Bit Back'em is a "nibble" backup utility designed for the C64 computer and a single 1541 disk drive.  This utility will allow you to make a backup copy of nearly all of your protected software quickly and easily.  Drive routines have been incorporated into the system for accuracy speed, and the elimination of drive head bumping (the noisy and destructive banging of the drive head against  the track one stopper) when read/write errors are encountered.

## HOW TO USE BIT BACK'EM

After the program has been properly loaded into the computer, you will be prompted with a screen blanking option.  Blanking the screen will speed-up the copy process by approximately fifteen percent, but the track and sector grid that displays the status of headers and data blocks will only appear during diskette exchanges. Select either Y or N.

The next prompt will instruct you to insert the diskette you

want backed up.  Do so, then hit any key when ready.  The drive will be initialized and the backup windows displayed.  Hit <RETURN> to begin the backup or <STOP/RESTORE> to abort and return to the start of the program.

The backup process will begin its first task; read and log the header information of the 683 sectors on the original diskette one track at a time.  Errors found during this pass are strictly header related.  Some graphic symbols will appear in a respective grid location denoting the status of the given header.  A plus sign denotes a standard header while a graphic X denotes a header error (20, 27 or 29 read errors) in that block.  After all thirty-five tracks have been read and diskettes exchanged, your backup diskette will be formatted with the header information that had just been read in.  As the tracks are formatted, respective grid locations will be cleared.  Another disk exchange and the data block backup routines take over.

The data block routines require one to three passes to operate properly depending on the number of data blocks that are present on the original disk.  Again, some graphic symbols will appear on the grid in respective locations.  An open circle denotes that a standard block has been read into the computer's buffer.  A graphic X denotes that a block with an error (22 or 23 read errors) has been read into the buffer.  A space denotes that there is no data block present (20 or 21 read errors).  During the writing operation, a closed circle denotes that a block has been written from the buffer.  When the data block transfer routines are complete,  the backup process is finished and the final prompt displayed.  If you wish to copy another

disk or to copy the same disk again, hit <RETURN> to go back to
restart the program.  If you wish to check out the disk that you
copied, then you should turn off the computer and proceed with the
normal load procedure for that particular disk.  Bit Back'em does not
facilitate a return to the Di-Sector Arsenal.  To reenter Di-Sector,
you must turn off the computer and then proceed to load the Di-Sector
program as outlined in the "User Disk Loading Instructions."


                        THREE MINUTE BACKUP!


     Di-Sector contains a three minute backup routine, fondly called
Blitzkrieg.  At the time of this writing, it is the world's fastest
full disk copy program for the Commodore 64 with a 1541 disk drive.
     If Selected from the Arsenal, Blitzkrieg will be loaded in a
matter of seconds.  You will be prompted to insert your source disk
and to press <RETURN>.  Some information will be read into the
computer's memory and you will be prompted to insert the destination
disk so it can be formatted.  After formatting, you will again be
prompted to insert the source disk and hit <RETURN>.  The disk drive
will activate and the screen will begin to flash colors on the screen
at a fantastic rate.  The screen will change color every time a block
is read into the computer's memory (about ten times per second!).
After reading about 230 sectors into memory your screen will return
to normal, and you will be prompted to insert the destination disk.
Also, at this time, you will be informed of any errors that may have
occurred during the reading process.  Insert your destination disk

and hit the <RETURN> key. You will be asked to swap the source and destination disks a total of six times. When all data has been copied, you will be informed that the process is complete and the program will restart.

NOTE: Most protected disks can be copied using Blitzkrieg, and then have the errors written to them by the Format Editor sub-system. Approximately 95% of all protected software at this time can be copied by first executing Blitzkrieg and taking notes as to what tracks/sectors the errors occured in. After the copy is created, you can "force" the errors to the desired track and sector with the Format Editor sub-system. Some, more heavily protected software packages must be duplicated with the Nibble Backup sub-system.


FILE BACKUP


Fast Back'em is a file-handling sub-system of Di-Sector v2.0. If Fast Back'em is selected from the Di-Sector Arsenal then after a few moments of disk action you will be presented with a menu of options that are available from Fast Back'em. Pressing the key associated with the desired command will invoke that function.


The command choices are:


(D) -Directory:

The directory command will list the directory of the diskette in the source drive on the screen. While the directory is listing, you may hit the space bar to freeze the listing or the run/stop key to quit listing and return to the main menu. Hit the space bar again to continue listing.

(@) -Disk command:

You may send any valid disk command to the source drive. Just type in the command after the prompt '>'.

(C) -Copy files:

Copying files transfers data from the source drive to the destination drive. Have the source drive ready before entering this command. Upon execution of this command, the directory will be read in and an editing window displayed. In the upper right hand corner of the screen there are two numbers separated by a slash. The first number is the page number of the screen you are currently editing and the second number is the total number of pages of the directory in memory (each page contains up to 40 file names). The commands for the editing window are explained as follows:

<SPC>  -(space bar) reverse a single file name.

<CRSR> -(cursor controls) up, down, left, right, home, clr home.

(N)     -next page of files (if at last
page, wraps around to first page).

(X)     -reverse all the file names on
the current page.

(C)     -copy files (after entering, you
are prompted with yes, no or quit).

A filename that is printed in reverse characters is a
file selected to be copied and a filename that is in normal
characters is a file that has not been selected to be copied.

Two drive users can let their machines go at it after the
copying starts.  Disk error prompts will not halt copying.

Single drive users have a buffer in memory that will load-up as
many files as it can hold, then prompt the user to exchange diskettes
(source and destination diskettes), write that data out, prompt for
the diskette exchange again and repeat the procedure until all files
selected have been transferred.  Disk errors will halt the copying
and prompt the user to try again-- yes, no or quit.

After all the copying is completed, you will be prompted to (M)
make another copy of the same files, (E) edit the same filenames that
you just finished copying or (R) return to the main menu.


(S) -Scratch files:


Scratching files is done on the source drive only.  All the
procedures and commands are the same as in the copy files procedure
named above except in this mode your are scratching files, not
copying.  This mode operates with the screen turned on even if screen

blanking had been previously set (it doesn't affect the speed of the scratching process).


(X) -Change device


This command allows the user to software change a two drive disk system into a drive 8 and drive 9 system.  Just follow the instructions in the screen prompts.


(P) -Disk status:


This command will read the error channel of the source drive and the destination drive (if they are different drives) and print-out the status of each.


(M) -Source drive number:


Use this command to designate the source drive number (8 or 9). If the drive number you enter at the prompt doesn't exist, an error message will be displayed and the source drive number will retain its previous value before you entered this command.


(N) -Destination drive number:

Use this command to designate the destination drive number (8 or 9).  If the drive number you enter at the prompt doesn't exist then an error message will be displayed and the destination drive number will retain its previous value before you entered this command.


(SPC) -screen blanking:


Hit the space bar while in the command menu for screen blanking during all copying routines.  Screen blanking is set when the Screen blanking message is printed in reverse characters.  It is a good idea to use this option, for it saves a lot of data transfer time (approximately 15%).


## SECTOR EDITOR


The Sector Editing sub-system of Di-Sector is called Reconnaissance, or Recon for short.  Recon will allow you to display and modify sectors of a disk in many different formats.  If Recon is selected from the Arsenal, after a short pause, you will be presented with a menu of options.  Pressing the key associated with your selection will invoke the desired function.  These sections will be explained in turn.


DISPLAY AND MODIFY SECTORS

If this is selected you will be prompted to enter the track and sector that you wish to display. These values should be within the normal limits of track and sector values (consult your 1541 users manual if you are not sure.) Your input may be in decimal form or, if preceded by a "$", in hexadecimal form. Example: "18" or "$12" will deliver the directory track.

If all goes well in reading the sector you have selected then it will be displayed on the screen. The top eight rows of your screen will display the ASCII text representation of the sector. The bottom sixteen lines represent the hexadecimal form of the sector. On the right side of the screen will appear various information that may be useful to you such as track, sector, error status, location in the computer's memory where the sector is stored, relative byte that you are examining and modification base (HEX, DECimal or ASCii.) The "CMD" at the lower right corner of the screen indicates that you are now at the command level and that Recon is awaiting your command.

You now have several options available to you in the command mode. Any of these options may be invoked by pressing the key that corresponds to that selection. The options are as follows:

A- ASCII mode. This will allow you to enter ASCII characters during sector modification. The Modification mode flag in the lower left of the screen will change to "ASC".

C- Cancel modifications. Recon will ignore any changes you have made to the sector and will re-read that sector from the disk.

D- Decimal mode.  This will allow you to enter data in decimal form during sector modification.  The modification mode flag will change to "DEC".

E- Emon editor.  Emon will allow you to edit a sector in assembly language format.  Emon is a stripped down version of Drive/64 Mon.  The primary difference between Drive/64 Mon and Emon is that Emon will allow examination and modification of the memory between $C000 and $C0FF only.  The commands available are "A" "D" "M" ":" "," "X".  Except for the "X" command, all commands are identical to those of the Drive/64 Mon.  Refer to that section of the documentation for detailed explanations of those commands.  "X" will return you to command level of Recon and will re-display the sector.

H- Hexadecimal mode.  This will allow you to enter hexadecimal data during sector modification.  The modification mode flag will change to "HEX".  This is the default editing mode.

L- Location change.  You will be prompted to enter a new track and sector number.  They may be in hexadecimal form if preceded by a "$".

M- Modify/examine sector.  Two cursors will appear on the screen. One of the cursors will be on line one.  It is the ASCII cursor.  The other cursor is on line nine and is two characters long.  It is the HEX cursor.  The HEX cursor can be moved with the cursor control keys

in the normal fashion, so that pressing the <cursor right> key will
move the HEX cursor one byte to the right, and pressing the <cursor
up> key will move the HEX cursor one line up, etc.  The ASCII cursor
(top) is synchronized to the HEX cursor, so that they both mark the
same relative byte.  This means that you are looking at the same byte
of the sector in two different forms.  On the center row of the
screen, to the far right, you will notice the relative byte (RB)
indicator.  The RB indicator will tell you in both decimal and
hexadecimal form what byte of the sector you are currently looking
at.  A little hands-on experience will clarify what is happening.

    When the cursor is positioned to a point where you wish to begin
modification, you may then proceed to enter new data into the sector.
 How this is done will depend on the modification mode that you have
selected.  This mode is indicated in the lower right side of the
screen.  If you are in the HEX mode, you may enter any legal
hexadecimal digits (00-FF).  As each pair of digits is entered, the
change is logged into the memory and onto the display.  The cursors
will then advance to the next byte.  If you are in the ASCII mode,
then you may type any normal ASCII characters, i.e. "1541 DISK
DRIVE."  If you are in the DECimal mode, you may enter any legal
decimal numbers (0-255).  Because the length of each entry may vary,
you must terminate any entry that is less than three digits with a
space.  If the number is three digits long, then the terminating
space is not required.  A typical entry might be "12 3 45 18289 " and
would be interpreted as "12,3,45,182,89".

    The modify function is much easier to use than it is to explain,
a little bit of practice will clarify all of the above instructions.

To exit the modify/examine mode, just press the <RETURN> key.  At
this point, if you wish, you can change your modification mode to
"A", "H" or "D" and then re-enter the modify/examine mode to continue
editing where you left off.


N- Next sector.  Is similar to the "L" command, but will move you to
the next sector of a file.


S- Screen dumped to printer.  This will print a current version of
the sector to the printer.  DO NOT select this option unless a
printer is attached and ready.


W-  Write sector to disk.  You will be prompted for the track and
sector to write the data to.  Pressing <RETURN> twice will cause the
sector to be written to the same area from which it was read.


X- Return to Recon main menu.


?- Will display an on-line help window  for all of the above commands
in case you forget what they are.



OTHER FUNCTIONS AVAILABLE


     You may use the cursor control keys to move between tracks and
sectors while in the command mode of modify/examine sub-section in
the following manner:

```
Cursor left    - read previous sector.
Cursor right   - read next sector
Cursor up      - read same sector of previous track
Cursor down    - read same sector of next track
```

Any errors that are encountered will be reported via an error menu.  You will have the options of R>etry operation, N>onstop retry or D>isplay readable portion of data.  If the error that occurred was in data or header checksum, then there is a good chance that most of the data is intact (errors 23 or 27).  If the "D" option is selected on any other type of error, then the last readable sector will be displayed.

SEND DISK COMMAND

Selecting this option will allow you to send any valid disk command to the current drive that you are using.  See the 1541 users manual for valid commands and their syntax.

FREE SPACE MAP

From Recon's main menu a free space map is available.  Insert the disk to be mapped, then press the <RETURN> key.  Sectors that are in use are indicated by an "X" and sectors that are not in use are indicated by "-".  The track index is across the top of the screen and the sector index is down the left side.  On the bottom of the screen will be a query as to mapping a new disk, returning to the menu or printing a hardcopy.  DO NOT select the printer option unless

you have a printer attached and ready.

CHANGE DRIVE

This will allow you to change your active drive.  The drive that
you select must be configured as a valid drive device (8 through 12)
on the serial bus.

CHANGE PRINTER DEVICE

If you have a non-standard printer attached to the serial bus,
you may need to call it by some device other than the standard device
4, or you may need to send it a non-standard secondary address during
printouts.  If so, then you may configure Recon to meet these
specifications.

RENUMBER DRIVE

This will allow you to renumber a drive that is attached to the
serial bus to some other legal drive device number.  If a drive is
renumbered that shares its device number with another drive or
device, then that device must be temporarily turned off or removed
from the serial bus while the drive in question is being renumbered.

NOTE:  The drive that the Di-Sector User disk resides on must be

device 8 when you select to return to the Arsenal.  If you change
device 8 to something else, be sure to change it back before
attempting to return to the Arsenal.

SET DEFAULT CONFIGURATION

Before selecting this option, have a normal, preformatted work
disk mounted on drive 8.  It must remain mounted until you return to
the Recon main menu.  This module will allow you to "permanently"
configure the Recon system for your own color combination preference.
As the Di-Sector disk arrives, it is configured in a way that is
satisfactory for most television sets and monitors.  This module is
used to set the colors to something more interesting (if you have a
monitor) or perhaps to something more readable (if you use a T.V.).
The configuration screen is fairly self explanatory.  Press "X" when
you have arrived at a satisfactory color configuration.  This will
save the data to the User diskette and return you to the Recon menu.

RETURN TO ARSENAL

Be sure the Di-Sector User disk is mounted on drive 8 before
selecting this option.  Your disk will spin and you will return to
the Di-Sector Arsenal.

# FORMAT EDITOR

The Format Editor of Di-Sector is called the Underground Network. It is a sub-system of small but complex utilities which allow you to, among other things, modify the headers of any given track or sector on a disk. The headers contain such information as the data block checksum, disk ID bytes and header checksum.

If the Network is selected from the Arsenal, after a short pause, you will be presented with menu of options which are available to you. All options work on the currently active drive. The options are as follows:

D- Directory. Takes a directory of the disk in the drive. Hold <CONTROL> key to slow the listing.

@- Send disk command. At the prompt, you may type in any valid disk command to be sent to the drive.

W- Whole disk error check. If selected, you will be prompted as whether to display the track/sector header information or not. If you respond Y>es, then the header information will be be displayed as the disk is checked. The abbreviations are as follows: TRK=Track, SCT=Sector, ID1=First ID byte, ID2=Second ID byte, CHK=Header checksum, DCHK=Data block checksum. If errors are encountered, you will be notified of the track, sector, and type of error. You will then be prompted to hit a key to continue the check.

T- Track error check.  This is identical to whole disk check, except it is for a single track only.  You will be prompted to enter the track you wish to scan.

F- Format disk.  This is an extremely fast format routine that performs identically to the normal format routines built into the DOS (the NEW command), except it is VERY fast (under 16 seconds).  If selected, you will be prompted to enter a disk name, and ID code. You will then be prompted as to whether to verify the format or not. If you opt not to verify the format, press N>o.  You will gain a bit of extra speed, but the routine will not do any checking as to the validity of what is being written.  The default is Y>es.

P- Write-protect a disk (software).  This routine will software write-protect a disk.  If an attempt is made to write to the disk, a "DOS MISMATCH" error will be generated.  The ONLY way to remove this write-protect is by re-formatting the disk, or with the "U" command.

U- This is the inverse of "P".  It will restore the disk back to normal if it was write-protected with the "P" command.

N- New BAM.  This will create a new BAM on the disk.  You will be prompted to enter a new disk name and a new BAM will be written to the disk.  The data contained on the disk will not be harmed.  It may take a few moments for this command to work and return to the menu.

R- Repair track.  This command will repair a damaged track on a

diskette. You will need to enter the track to be repaired and also a track on the disk that you KNOW is GOOD. The program needs to know what a good track looks like so that it can get the ID codes correct. If there is an error 22 or 23 on a sector, then the data block will be preserved. If there is some other error on a sector, then the data block for that sector will be left blank.

C- Create errors. This will create errors on any track/sector of a disk. This is useful in copying some types of protected software, and for experimentation with your own forms of software protection. The errors you can create are 20, 21, 22, 23, 27, and 29. For most errors, you will be asked the track, starting sector and number of sectors to write the error to. Some errors, such as error 29, can only be written to an entire track (this will be done automatically).

NOTE: Error 21 is a very flakey error to write. Any slight deviation of your disk rotation speed will cause one sector too many, or one sector too few to be written to the disk. Do not try to adjust your speed, however, just repair the track and try again. In most instances it does not matter if you write too many error 21s to the track as most software protection schemes will not check. Also, if you are writing error 21, you MUST write at least FOUR consecutive sectors with that error to any particular track.

CNTL D- will allow you to change the current active drive of the Underground Network. All activities of the Network will take place on that drive.

X- Return to Arsenal.  Have the User disk mounted on drive 8 and then
select this option.  You will then return to the Di-Sector Arsenal.


DRIVE/64 MON


Drive/64 Mon is a powerful machine language monitor for the
Commodore 64 and the 1541 disk drive.  It is similar in operation to
other machine language monitors for the C-64, but provides some
interesting and powerful features not found in most commercially
available monitors.

The primary difference between Drive/64 Mon and most other
monitors is the fact that not only can you monitor the operation of
the C-64 but you also have the option of monitoring the operation of
the 1541 disk drive.  Drive/64 Mon was written with the intent that
it be used as an aid in the development of drive routines, and is
extreemly useful in this area.  Many of the sophisticated drive
routines in Di-Sector v2 were written with Drive/64 Mon.  If you are
interested in writing drive routines we recommend that you purchase a
copy of "Anatomy of the 1541" from Abacus Software.  It should prove
to be a very valuable resource in your endeavors.  Otherwise, you
will have to figure things out the hard way like we did.

The Drive/64 monitors are not available from the Arsenal.  The
programs are on the disk in normal files, and can be loaded as such.
After power on, load the directory and LIST it.  The drive/64 mon
files can be loaded by typing 'LOAD "filename",8,1', and then doing a
SYS command to the number in the parenthesis that you see in the

filename.  The following is an example:

'LOAD "DRVMON64 (32768)",8,1'

'SYS 32768'


For the version the loads into the BASIC area, just LOAD and RUN it.
These modules were not incorporated into the Asenal in order to
ensure maximum compatibility with the software that you are
developing or examining.


DRIVE/64 MON COMMANDS


ASSEMBLE          A        Assemble a line of 6510/6502 code

DISASSEMBLE       D        Disassemble 21 lines of 6510 code

FILL              F        Fill memory with the specified byte

GO                G        Start execution at the specified address

HUNT              H        Hunt through memory for all

                              occurrences of certain bytes

LOAD              L        Load a file from a device

MEMORY DISPLAY    M        Display memory as a hex/ASCII dump

OPERATION MODE    O        Operate on drive or 64 (ram/rom)

PRINT             P        Disassemble consecutive lines of code

REGISTERS         R        Display the 6510 registers

SAVE              S        Save Memory to a device

TRANSFER          T        Transfer code from one section of

                              memory to another section

TRANSFER-COMP     TC       Transfer code from the computer's memory

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                        to a disk drive's memory

TRANSFER-DRIVE    TD      Transfer code from a disk drive's memory

                        to the computer's memory

VERIFY            V       Verify a file in a device to memory

EXIT              X       Exit the monitor

DISK STATUS       @       Read the error channel of a disk drive

DISK COMMAND      @cmd    Send a command to a disk drive

DIRECTORY         @$      Read the directory of a diskette
```

COMMAND DESCRIPITIONS

COMMAND:   A      (ASSEMBLE)

Purpose:   Enter a line of assembly code.


Syntax :   A <addr> <mnemonic> <operand>


   <addr>  A four digit hexadecimal number indicating the location in
memory to place the opcode.
   <mnemonic>  A standard MOS assembler mnemonic (eg. LDA, etc).
   <operand>  The operand can be of any of the legal addressing
modes. Enter a 2 digit hex number for zero page modes and a 4 digit
hex number for non-zero page numbers.
   After a line of code is assembled, the monitor will
automatically print the next legal memory location for another entry
of code.  If there are any errors on the line, a question mark is

displayed and assembly halted.  The screen editor may be used to correct any errors on the line.


Example:    .A C000 LDA #$01

            .A C002



COMMAND:   D     (DISASSEMBLE)

Purpose:   Disassemble machine code into assembler mnemonics.


Syntax:    D <addr>


   <addr>   A 4 digit hexadecimal number indicating the address to start disassembling from.  Twenty-one lines of code will automatically be displayed.


Example:    .D C000

            ., C000 LDA #$01

            ., C002 ???

            ., C003 JSR $CA34

               ...etc.



COMMAND:   F     (FILL)

Purpose:   Fill a range of locations with a specified byte.


Syntax:    F <addr1> <addr2> <byte>

&lt;addr1&gt;  The starting location to fill with the byte.

&lt;addr2&gt;  The ending location to fill with the byte.

(byte&gt;  The 2 digit hexadecimal number to be written.


COMMAND:  G    (GO)

Purpose:  Begin execution of a program.


Syntax:   G &lt;addr&gt;


&lt;addr&gt;  The address to begin the execution at.  This command will restore all registers as displayed by the R command.  If the address is left out, execution begins at the current PC value.


Example:    .G 033C


COMMAND:  H    (HUNT)

Purpose:  Hunt through a specified range of memory for all occurrences of a set of bytes.


Syntax:   H &lt;addr1&gt; &lt;addr2&gt; &lt;bytes&gt;


&lt;addr1&gt;  Starting address of the hunt.

&lt;addr1&gt;  Ending address of the hunt.

&lt;bytes&gt;  A set of two digit hexadecimal numbers separated by

spaces to search for.


Example:     .H 4800 4FFF 20 5A C4



COMMAND:   L    (LOAD)

Purpose:  Load a file from a device.


Syntax:   L "<name>",<device>


   <name>  Any legal filename up to 16 characters in length.

   <device>  A two digit hexadecimal number indicating the device to
load from.


Example:     .L "DEMO PART1",08



COMMAND:   M    (MEMORY DISPLAY)

Purpose:  To display memory as a hex/ASCII dump within the specified
address range.


Syntax:   M <addr1> <addr2>


   <addr1>  Starting address of the dump.

   <addr2>  Ending address of the dump.  If omitted, the dump will
end at location $FFFF.

   Valid ASCII characters are displayed in reverse video.

Non-printable characters are displayed as a period.


Example:     .M 3000 30FF



COMMAND:   O      (OPERATION MODE)

Purpose:  To select the memory configuration in the C64 or to monitor
a disk drive's memory.


Syntax:    O <memory>   or

           O<device>


   <memory>  A two digit hexadecimal number determining the memory
configuration.   The number will be stored in the 6510 I/O register.
   Possible system configurations are:


37= default   36= basic off   35= basic/kernal off   10= 64k RAM


   <device>  The device number, either 8 or 9, of a disk drive to
monitor.  To return to the computer's memory, use the O command
alone.


Examples:    .O8        (monitor disk device 8)

             ]O         (return to C64)

             .O 10      (configure C64 for 64k RAM system)

COMMAND:   P     (PRINT)

Purpose:   To disassemble a specified range of memory without the periods and commas displayed.


Syntax:    P <addr1> <addr2>


   <addr1>  Address to begin disassembly.

   <addr2>  Ending address of the disassembly.  If this is omitted, disassembly will end at location $FFFF.

   This command may be used to dump the disassembly to a printer (use the basic CMD command to direct all output to a printer and then execute the monitor and P command).


Example:     P E000 E080



COMMAND:   R     (REGISTERS)

Purpose:   Display the 6510 internal registers.


Syntax:    R


Example:     .R

             PC   SR AC XR YR SP
           .;037F 32 00 34 12 E8



COMMAND:   S     (SAVE)

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Purpose:  Save a specified memory range to a device.


Syntax:    S "<name>",<device>,<addr1>,<addr2>


   <name>  Any legal filename up to 16 characters in length.

   <device>  A two digit hexadecimal number indicating the device to

save the file to.

   <addr1>  Starting address of the save.

   <addr2>  Ending address of the save plus one.

   Note:  a 01 is always sent as the secondary address of the save

(non-relocatable).


Example:    .S "NAME",08,033C,03FF



COMMAND:   T     (TRANSFER)

Purpose:  Transfer memory segments from one memory area to another.


Syntax:    T <addr1> <addr2> <addr3>


   <addr1>  Starting address of the segment to be moved.

   <addr2>  Ending address of the segment to be moved.

   <addr3>  Starting address of the area to store the data.

   Memory segments of any length can be moved forward or backward any

number of bytes.


Example:    .T 1200 1240 C000

COMMAND:  TC   (TRANSFER-COMP)

Purpose:  Transfer memory segments from the computer to a disk
drive's memory.


Syntax:   TC <addr1> <addr2> <addr3>


   <addr1>  Starting address of segment to be downloaded.

   <addr2>  Ending address of segment to be downloaded.

   <addr3>  Starting address of the area in the disk drive to store
the data.


Example:   .TC C000 C2FF 0300



COMMAND:  TD   (TRANSFER-DRIVE)

Purpose:  Transfer memory segments from a disk drive to the
computer's memory.


Syntax:   TD <addr1> <addr2> <addr3>


   <addr1>  Starting address of segment to be uploaded.

   <addr2>  Ending address of segment to be uploaded.

   <addr3>  Starting address of the area in the computer to store the
data.

Example:    .TD 0300 04FF C000



COMMAND:  V    (VERIFY)

Purpose:  Verify a file from a device to memory.


Syntax:   V "<name>",<device>


   <name>  Any legal filename up to 16 characters in length

   <device>  A two digit hexadecimal number indicating the device

containing the file.

   If an error during verify occurs, a question mark will be

displayed.


Example:    .V "DEMO PROG1",08



COMMAND:  X    (EXIT)

Purpose:  Exit from the monitor.


Syntax:   X



COMMAND:  @    (DISK STATUS)

Purpose:  Read and display the error channel of a disk drive.


Syntax:   @

Example:    .@

            .00,OK,00,00


COMMAND:    @cmd (DISK COMMAND)

Purpose:    Send a legal disk command to a disk drive.


Syntax:     @<cmd>


   <cmd>    Any valid disk command.


Example:    .@N0:TEST DISK,MH


COMMAND:    @$    (DIRECTORY)

Purpose:    Read and display the directory of a diskette.


Syntax:     @$


   While the directory is being displayed, the space bar pauses and
continues the listing and the run/stop key terminates the listing.


ARTS BACKUP


   Art's Backup was designed to perform one specific task--make an

unprotected backup of any of Art's original diskettes.  This routine should only used as a means for making a backup copy of your own personal Art's diskettes for your own personal use.

Using Art's Backup is quite simple.  After booting it up, insert Art's diskette that is to be backed-up and hit the <RETURN> key. Art's Backup will now go to work: examine the original diskette's boot, read random file data--and after a diskette exchange--format your backup diskette, create an auto start boot and save the now unprotected random files as standard program files.  Art's Backup's job will then be completed and you will exit to the BASIC prompt. You must now load-up the directory of the original Art's disk and look for any files listed below the two "EA" files.  If there are any, you must reload Di-Sector and use File Backup sub-system to transfer them over to your backup diskette.  The backup copy will thus be complete and totally unprotected, whereby future backups may be made using any standard-filename copy routine, such as Fast Back'em or with a standard-disk copier such as Blitzkrieg.

To boot the new disk, just type: LOAD "*",8,1 and the program will load and begin execution.  Because the new disk contains normal program files, they will load much faster than the original disk in many cases.

## ----- LIMITED WARRANTY -----

We have attemped to ensure that this program works as specified in
this manual.  Nevertheless, there may be errors in the program or its
documentation.  We would appreciate receiving notice of any errors
you may find.  You may recieve an upgrade of the latest version
available of this program at any time by sending your original
diskette and five dollars to Starpoint Software, Star Route, Gazelle,
Ca 96034.

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Neither the authors nor the distributors of this program shall be
liable for any damages which might be caused by errors or omissions
in this product.  Should the program be unreadable or damaged, the
distributor will replace it upon return of the defective diskette
within 90 days of the date of delivery.  There are no other
warranties, expressed or implied, including the warranties of
merchantability or fitness for a particular purpose.

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