**Operating Systems and Languages Library** 

# MS-DOS

Quick Reference Guide







How to position your Quick Reference Guide

# PREFACE

This booklet is a Quick Reference Guide for the MS-DOS operating system. It describes Microsoft Version 3.30 of MS-DOS, and is for anyone who wishes to use this operating system on an Olivetti Personal Computer.

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# **MS-DOS Parameters - MS-DOS Switches**

# **MS-DOS** Parameters

d: Disk drive letter.

drive: Disk drive letter.

**USA** (default): date Date in format month-day-year (mm-dd-yy). EUROPE: Date in format day-month-year (dd-mm-yy).

Up to three-character .ext extension to the filename.

filename Up to eight-character name of the file on disk.

filespec Disk drive letter and filename.

Disk drive letter and directory path location.

pathname Path to and name of the file.

Time in format [hours:minutes [:seconds ] . hundreths]] Note The delimeter setting (:) is country dependent.

Standard input stdout Standard output, default is CON but may be replaced by a device or file.

#### Control Keys

time

stdin

Press CTRL C or CTRL BREAK to abort commands.

Press CTRL P or CTRL PRTSC to echo screen to printer.

Press SHIFT PRTSC to print the screen.

Press CTBL S or CTBL NUMLOCK or **PAUSE** to stop screen scrolling: press any key to resume.

#### Syntax Rules

Separate commands and parameters by delimiters, i.e. a space (), a comma (,), a semicolon (:), or an equal sign (=).

Enter all words printed in bold capitals e.g. COPY, BACKUP, DATE, but you may use either small or capital letters.

Supply values for words shown in lowercase italic letters, e.g. pathname.

Enter all punctuation exactly as shown, except for square brackets, vertical bars, and braces.

- You may choose an option in [] square brackets.
- You must choose an option separated by a vertical bar in braces.
- Repeat an item followed by an ... ellipsis as often as you wish.

## **Reserved File Names**

Do not use the following names either as filenames or as extensions: AUX, COM1, COM2, CON, LPT1, LPT2, LPT3, NUL, or PRN.

# **MS-DOS** Switches

The switch is followed here by the MS-DOS command where you may use it. Note that a switch can have a different function with different commands.

FC Number of lines in a file that must match to resynchronize after a mismatch (default = 2).

/+ number SORT Sort data by characters starting with this column number.

# **MS-DOS** Switches

/1 DISKCOMP Compare only the first side of the diskette.

DISKCOPY Copy only the first side of the diskette.

FORMAT Format single-sided diskette.

- /4 FORMAT Format 48 tpi diskette in 96 tpi drive.
- /8 DISKCOMP Compare only eight sectors per track on the diskette.

FORMAT Format each diskette with only eight sectors per track.

- +A ATTRIB Sets the archive attribute of a file.
- -A ATTRIB Clears the archive attribute of a file.
- /A BACKUP Add the files to the diskette presently in the drive.

COPY With a source file: regard this as an ASCII text file and copy it up to the first end-of-file character (**CTRL Z**).

COPY With a target file: regard this as an ASCII text file and add an end-of-file character (**CTRL Z**) as the last character.

REPLACE Add new files to the target directory instead of replacing existing ones.

XCOPY Copy files that have their archive bit set. The archive bit of the source file is not modified.

/A: date

RESTORE Only those files that were last modified on or after the given date should be restored.

/a FC Displays only the lines that begin each set of differences. The intermediate lines are represented by ellipsis (...). /B COPY With a source file: regard this as a binary file and copy it including any end-of-file characters.

> COPY With a target file: regard this as a binary file and do not add an end-of-file character.

FORMAT Leave room on diskette for MS-DOS hidden system files.

GRAPHICS The background color is printed, otherwise the background is suppressed.

#### /B: date

RESTORE Only those files which were modified on or before the given date should be restored.

**/b** FC Perfom a binary comparison of the files and do not resynchronize after a mismatch.

/C command-string COMMAND Obey the following command-string.

C FIND Print how many lines contain the string.

PRINT Turn on print cancel mode: suspend these files from the print queue.

- /c FC Consider all letters as uppercase.
- **/D** GRAPHICS For a machine with an EGC, but no resident DEB INT 10 installed.

JOIN To unsplice a join.

REPLACE Replace files in the target directory only if the source files are newer than the corresponding target files.

SUBST To delete a substitution.

# **MS-DOS** Switches

#### /D: date

BACKUP Copy only those files created or edited since this date.

XCOPY Copy source files that have been created or modified on or after this date.

**/E** APPEND MS-DOS keeps the APPEND paths in the environment.

XCOPY Copy empty subdirectories. Use with /S switch.

#### /E: nnnnn

COMMAND Specifies the environment size, *nnnnn* can range between 160 and 32768 bytes.

#### /E: time

RESTORE Copy only those files wihich were modified at or earlier than the given time. /F BACKUP Formats, unformatted disks before backing up. Uses FORMAT.

CHKDSK Correct any errors found.

TREE Lists the files in each directory.

- /F: memory-space SHARE The amount of memory space reserved for recording file sharing information. The default memory space for file sharing information is 2048 bytes.
- /H GRAPHICS 200 scanlines (Industry Standard Compatible).
- /L: pathname BACKUP Makes a backup log entry in the specified file.
- /L: locks

SHARE Allocates maximum number of locks it is possible to apply to a file. The default value is 20 locks. /L: time

RESTORE Only those files that were last modified at or later than the given time should be restored.

- /1 FC Compares the files in ASCII mode. It is the default when you compare files that do not have extensions of .EXE, .COM, .SYS, .OBJ, .LIB, or .BIN.
- /lb length

FC Sets the Internal Line Buffer to length of lines. The default length of the internal buffer is 100 lines.

/M BACKUP Only copy files changed since last backup.

RESTORE Restore only those files modified since last backup.

XCOPY Only copy files with their archive bit set. Turns off the archive bit.

/N FIND Display the relative line number of each line in the file.

RESTORE Only those files that no longer exist on the restore-drive should be restored.

/N: sectors

FORMAT the diskette to have the given number of sectors.

- /n FC The line numbers are displayed on ASCII comparisons.
- /P COMMAND Makes copy of COMMAND.COM permanent.

DIR Stop displaying the directory when the screen is full. Press any key to continue.

PRINT Turn on print mode: add these files to print queue.

REPLACE Prompts you before replacing or adding a file.

# **MS-DOS Switches - MS-DOS Commands**

RESTORE Prompts you before restoring files modified since last backup.

XCOPY Prompts you before copying each file.

- + **R** ATTRIB Sets the read-only attribute of a file.
- -R ATTRIB Clears the read-only attribute of a file.
- **/R** GRAPHICS Black is printed black and white is printed white, otherwise printing is reversed.

REPLACE Replace read-only files as well as unprotected files.

SORT Sort data in reverse ASCII order.

**/S** ATTRIB File(s) in the specified directory and subdirectories will be processed.

BACKUP Copy all files in directory and all it's subdirectories.

FORMAT Copy the system files to the disk.

REPLACE Search all subdirectories of the target directory, while replacing matching files.

RESTORE Restore files in all subdirectories.

XCOPY Recursively copy lower level subdirectories and their files.

- /T PRINT Terminate all files in the print queue.
- /T: time

BACKUP Backs up only those files that you last modified at or after the given time. /T: tracks

FORMAT a diskette to have the given number of tracks.

- /t FC Tabs are not expanded to spaces.
- /U GRAPHICS 400 scanlines (Olivetti High Resolution).
- /V CHKDSK Display status messages. COPY Verify the copied file.

FIND Display all lines not containing the string.

FORMAT Enter a volume label on this diskette.

XCOPY Verify the copied file.

**/W** DIR Display only the file names widthwise.

**REPLACE** Wait before replacing or adding files.

XCOPY Wait before starting to copy files.

- /w FC Compress tabs and spaces during the file comparison.
- /X APPEND Commands such as COMP, DIR and COMMAND /C will search for files as if they were in the current directory.

# MS-DOS Commands [drive:][path] APPEND [/X][/E]

[drive:][path] **APPEND**[=][drive:] path [;[drive:]path...]

The first time APPEND is called: sets a search path for data files.

**APPEND**[=][*drive*:] *path* [;[*drive*]*path*...]



# APPEND[=];

Subsequent calls to modify the append path or to show the path or to delete the path.

# **MS-DOS** Commands

#### [d:][path] ASSIGN [drive1 = drive2]...

Routes all requests for the first drive to the second drive. Enter without parameters to reset.

#### [d:][path] ATTRIB [+R|-R] [+A|-A]pathname/S

Sets or resets the read only attribute and/or archive bit attribute of a file. With only *pathname* as a parameter, displays the attribute setting.

[d:][path] BACKUP source-drive: [pathname]target-drive: [/S] [/M] [/A] [/F] [/D: date][/T:time][/L[pathname]]

Creates a back-up of one or more disk files from a hard disk or high capacity diskette on a series of diskettes or a hard disk.

#### BREAK [ON | OFF]

Turns **CTRL C** or **CTRL BREAK** the abort key on or off.

#### CALL [drive:][path] batchfile

Calls a batch file from within a batch file and returns to the calling batch file.

### CHCP [nnn]

Displays or changes the system code page.

#### CD or CHDIR [drive:][path]

With a *path* changes the current directory. Without a *path* displays the name of the current working directory.

#### [d:][path] CHKDSK [drive:][path] [filename] [/F] [/V]

Check disk and reports file and memory status.

# CLS

All data on the display screen is cleared and the cursor is moved to the home position.

[d:][path] COMMAND [drive:shellpath][cttydev] [/E: nnnnn][/P][/C command-string]

Starts a new command processor.

#### [d:][path] **COMP** [pathname1 [pathname2]]

Compare the first file with the second file.

#### COPY [/A|/B] pathname1 [/A|/B][ + pathname2 [/A|/B]...] [pathname [/A|/B]][/V]

Copies one or more files. Alternatively files maybe concatenated and copied to a destination file.

#### **CTTY** device

Changes the input/output console from which you issue commands.

#### DATE [date]

Displays or sets the system date.

#### **DEL** or **ERASE** pathname

Deletes the specified file(s) from disk.

#### DIR [pathname] [/P] [/W]

Lists details of the files in the current or specified directory.

#### [d:][path] **DISKCOMP** [drive1: [drive2:]] [/1] [/8]

Compare contents of first diskette with second diskette.

#### [d:][path] **DISKCOPY** [sourcedrive:] [targetdrive:][/1]

Copies the contents of a diskette onto another diskette.

#### [@] ECHO [ON | OFF | message]

Turns the batch file echo feature on/off or display message.

#### [d:][path] **EXE2BIN** pathname1 [pathname2]

Converts files from EXEcutable format to BINary format.

# EXIT

Exits from a secondary command processor and returns to a parent program or command processor.

# **MS-DOS** Commands

#### [d:][path] FASTOPEN drive: [nnn]...

Decreases the amount of time needed to open frequently-used files and directories. The default and minimum value for *nnn* is 10 files or directories.

[d:][path] FC [/#] [/a][/b][/c][/l][/n] [/t][/w][/lb length] filename1 filename2 Compares the contents of two files.

#### [d:][path] FDISK

Sets up the MS-DOS partition(s) for the hard disk(s).

#### [d:][path] FIND [/V][/C][/N] "string" [pathname]...

Searches for a specific string of text in a file or files.

FOR %char IN (*item* ... ) DO [command] %char (Interactive entry) FOR %%char IN (*item* ... ) DO [command] %%char (Batch entry) Allows iterative execution of MS-DOS commands. [d:][path] FORMAT drive: [/1] [/1] [/8] [/B] [/S] [/V] [/N:sectors] [/T:tracks] Formats a disk to receive MS-DOS files.

#### **GOTO** label

Jumps to a label in a batch file (in the file precede label with a colon, e.g. :LABEL).

#### [d:][path] GRAFTABL [nnn][/STATUS]

Loads a table of extended ASCII characters, to enable them to be displayed when using a display in graphics mode.

#### [d:][path] GRAPHICS [printer-type] [/B][/R][/D [/U|/H]]

Enables graphics currently displayed on the screen to be printed along with any text when the **SHIFT PRTSC** keys are pressed.

#### [d:][path] GWBASIC

Enters the MS GW-BASIC interpreter.

#### [d:][path] HEXDUMP [drive:] filename

Displays the contents of a file, byte by byte, in hexadecimal.

#### IF [NOT] condition command

Causes conditional execution of a command in a batch file.

#### [d:][path] **JOIN** connected-drive splicedrive:\splice-directory

Joins a disk drive to an empty directory on another drive to produce a single directory structure.

#### [d:][path] JOIN connected-drive: /D

With a parameter unsplices a join. Without a parameter shows the status of the join.

#### [d:][path] KEYB [xx[, yyy], [pathname]]

Loads a Keyboard definition program. KEYB without parameters displays the current status. [d:][path] LABEL [drive:][volume-label] Creates, changes or deletes a disk volume label.

#### MD (or MKDIR) path

Make a new directory.

[d:][path] MODE COMn:baud[, parity [, databits[, stopbits[,P]]]] Sets the protocol for an RS-232C port.

# [d:][path] MODE n or MODE [n], m [,T]

Set monitor mode (T = display test pattern).

#### [d:][path] MODE LPT #: [chars] [, spacing] [,P]

Sets the mode of operation for a compatible printer.

#### [d:][path] MODE LPT #:= COMn

Redirects the output for any printer to a communications port.

# **MS-DOS** Commands

[d:][path] MODE device CODEPAGE PREP[ARE] = ((nnn[,nnn...]) pathname [d:][path] MODE device CODEPAGE SEL[ECT] = nnn [d:][path] MODE device CODEPAGE REF[RESH] [d:][path] MODE device CODEPAGE [VSTATUS]

Sets or displays code pages for parallel printers or your console screen device.

#### [d:][path] MORE

Sends output to the terminal one screen at a time.

#### [d:][path] NLSFUNC [pathname]

Loads country-specific information.

#### PAUSE [comment]

Suspends execution of the batch file in which it is contained.

[d:][path] PRINT [/D: device] [/B: buffsize] [/U: busysticks] [/M: maxticks] [/S: timeslice] [/Q: queuesize] [[pathname]...]

(The first time PRINT is called.) Queues text files for background printing.

#### [d:][path] PRINT] [[pathname] [/C|/P|/T]...]

Subsequent calls can add (/P), or cancel (/C) files from the queue or empty (/T) files from the queue. PRINT on its own displays the list of files in the queue.

#### **PROMPT** [[meta-character | character]...]

Sets the MS-DOS command prompt. [d:][path] **RECOVER** [drive: | pathname]

Recovers a file or an entire disk containing faulty sectors.

#### REM [remark]

Displays a remark during the execution of a batch file.

**REN** (or **RENAME**) *pathname filename* Renames files. [d:][path] **REPLACE** [source-drive:] [source-path]source-file [target-drive] [target-path] [/A][/P][/R][/S][/W] Updates or adds files according to the criteria set by the option switches.

[d:][path] **RESTORE** source-drive: [target-drive:][pathname] [/**S**][/**P**][/**B**: date][/A:date][/**E**: time][/L:time][/**M**][/**N**]

Restores files from disk(ette) to disk, (the disks must have been created using the BACKUP command).

#### **RD** (or **RMDIR**) [drive:] path

Removes a directory.

#### [d:][path] SELECT [[s-drive] t-drive:[tpath]] country-code keyboard-code

Copies your MS-DOS system diskette to create a working copy for your selected country and keyboard.

**WARNING:** This command formats the target drive. Only use for installing MS-DOS for the first time onto unused disks.

#### **SET** [key = value]

Assigns one string value in the environment to another key string; for use in application programs or batch files.

#### [d:][path] SHARE [/F: memory space] [/L: locks]

Installs Network file and record locking. Installs a resident facility, which checks for diskette removal during reading and writing to diskettes.

#### SHIFT

Allows access to more than 9 replaceable parameters in batch processing.

#### [d:][path] SORT [pathname] [/R] [ / + number]

Sorts data in forward or reverse ASCII order.

#### [d:][path] SUBST dummy-drive: pathname

Substitute a dummy drive specifier for a pathname.

# **MS-DOS Commands - DEBUG The Debugger**

#### [d:][path] SUBST [dummy-drive: /D]

To delete the dummy drive substitution. SUBST with no parameters displays the current substitution.

#### [d:][path] SYS drive:

Updates the specified disk with the hidden system files. The source disk must be the default drive.

#### TIME [time]

Displays or sets the system time.

#### [d:][path] TREE [drive:] [/F]

Displays all the directories and paths on the specified drive. It also has an option to list the files in each directory.

#### TYPE pathname

Displays the contents of the specified file on the screen.

# VER

Displays the version number of MS-DOS you are using.

#### VERIFY [ON | OFF]

Verify data written to disk, (same function as COPY /V switch).

#### VOL [drive:]

Displays the volume label of the disk in the specified or default drive.

[d:][path] XCOPY [source-drive:] [source-path] source-filename [target-drive:][target-path][target-filename] [/A][/D:mm-dd-yy][/E][/M][/P][/S][/V] [/W]

Copies files and directories, including lower level directories if they exist.

# **DEBUG** The Debugger

#### [d:][path] **DEBUG** [[path] filespec [, arglist]]

## **DEBUG** Parameters

address Hexadecimal value in one of these formats:

segment register, colon, hexadecimal offset, e.g. DS:0300 hexadecimal segment, colon, hexadecimal offset, e.g. 9D0:0100 hexadecimal offset value, e.g. 200

byte One- or two-character hexadecimal value.

bytevalue Hexadecimal byte value.

- *drive* The drive you wish to select (0 = drive A; 1 = drive B;2 = drive C).
- range Range of addresses, specified as either: address L value (address = start of range, value = length of range), or address, address (addresses = start and end of range).
  - One- to four-character hexadecimal value.

value

# **DEBUG** Commands

#### ASSEMBLE

A [address] Assemble 8086 mnemonics directly in memory.

#### COMPARE

**C** range , address Compare two areas of memory.

#### DUMP D [ range | address ] Display this area of memory.

#### ENTER

**E** address [, bytevalue [, bytevalue ]...] Replace value at address with bytevalue.

#### FILL

**F** range, bytevalue [, bytevalue ...] Fill range with bytevalue.

# **DEBUG** The Debugger - LINK The Linker

#### GO

#### G [= address ][, address ]...

Execute program from = *address* with breakpoints at *address* to display registers.

#### HEX

#### H value-a, value-b

Display sum and difference of two hexadecimal values.

#### INPUT

#### I value

Input and display byte from port (*value = port address*).

#### LOAD

#### L [ *address* [ , *drive* , *sector-a* , *sector-b* ]] Load file or absolute disk sectors into memory.

#### MOVE

#### M range, address

Move range of memory to new location starting at address.

#### NAME

N [path] filespec [, arglist] Name file and provide parameters.

#### OUTPUT

**O** value, byte Send this byte to an output port.

#### PROCEED

**P** [ = address ][, value ] Proceed through CALL and INT instructions.

#### QUIT

Quit DEBUG and discard file.

#### REGISTER

#### **R** [ register-name | **F**]

Display or change register and flags.

#### SEARCH

S range, list Search range for list of bytes.

#### TRACE

[ = address ][, value]

Execute instructions, display register contents, flag settings, and next instruction.

#### UNASSEMBLE

U [ range | address ] Unassemble instructions.

#### WRITE

W [ address [ , drive , sector-a , sectors ]] Write file or absolute disk sectors to disk.

# **LINK The Linker**

# LINK Switches

/D or /DSALLOCATE Load all data defined to be in DGROUP at high end of group. (Default = load all data at low end of group.)

#### /H or /HIGH

Load the run file as high as possible in memory. (Default = load run file as low as possible.) DO NOT USE THIS SWITCH WITH PASCAL OR FORTRAN PROGRAMS.

#### /L or /LINENUMBERS

Include the line numbers and addresses of the source statements from the input modules, in the list file.

#### /M or /MAP

List, in alphabetical order, all public (global) symbols defined in the output modules. (Default = list only errors and undefined global symbols.)

#### /N or /NODEFAULTLIBRARY SEARCH

Do not automatically search the default library to resolve external references.

# LINK The Linker - EDIT The Video File Editor

/P or /PAUSE Pause to change disks before MS-LINK outputs the run (.EXE) file. DO NOT CHANGE A DISKETTE THAT IS TO RECEIVE A LIST FILE, OR THAT IS USED FOR A TEMPORARY (VM.TMP) FILE.

/S: or /STACK: size Override the stack size provided by the macro assembler or compiler for the load module. (Entering 1 to 511 defaults

# LINK Parameters

to 512.)

- *libfile* Pathname of a library file (default ext = .LIB)
- *listfile* Pathname of the list file (default = NUL.MAP)

*objfile* Pathname of an object module you wish to link (default ext = .OBJ) *runfile* Pathname of a run (executable) file you wish to create (ext = .EXE)

Interactive Entry

#### [d:][path] LINK

Object Modules [OBJ]: *objfile*[ + *objfile*]... [switch]...

Run File [*objfile.EXE*]: [*runfile*][*switch*]...

List File [NUL.MAP]: [listfile][switch]...

Libraries [.LIB]: [libfile[ + libfile]...][switch]...

Command Line Entry

[d:][path] LINK objfile[ + objfile]... [switch]... [,[runfile][switch]...[,[listfile] [switch]...[,[libfile[ + libfile]...][switch]...]]]

Automati	SHIFT F4 F4	
EDIT T	SHIFT F5 F5	
[d:][path] EDIT [/B][/T][/R] pathname		SHIFT F6
/B Create a back up file		F6
/T Replace spaces with TABS		SHIFT F7 F7
/R Read-only		SHIFT F8
EDIT Function Keys		F8
SHIFT F1	Discard and quit	SHIFT F9
F1	Command mode	F9
SHIFT F2	Delete a line	SHIFT F10
F2	Restore lines from buffer	F10
SHIFT F3 F3	Split line Join lines	ESC

Go to start of line Go to end of line Save and exit Save and continue Erase to end of line Move cursor to next line Insert MARK line in text Move cursor to MARK line Search to start of file Search to end of file Move up a line Move down a line Move up a half screen Move down a half screen To enter control characters

# EDIT The Video File Editor - EDLIN The Line Editor

SHIFT	Tab backwards
	Tab forwards
HOME	Move to start of file
END	Move to end of file
INS	Insert/overstrike mode
CTRL K	Erase to end of line
CTRL L	Refresh
CTRL R	Restore contents of current line
← or <b>BS</b>	Backspace
PG UP	Move up a screen
PG DN	Move down a screen
DEL	Delete a character

ENTER J Insert line or Execute command

# F1 DELETE ENTER

Remove all text between cursor and MARK line and place in restore buffer.

**F1 FILE** *pathname* **ENTER** Stop editing this file and edit another file.

F1 GOTO *line* ENTER Move window to this line number.

# EDLIN The Line Editor [d:][path] EDLIN filespec

**EDLIN** Parameters

?

#

- Display OK? prompt
  - Add text to end of file

count	Number	of	times

line Line number

line-a First line of range

line-b Last line of range

line-c Target line

*n* Number of lines to write

# Intra-Line Commands

F1 or - COPY1 Copy one character from source line to edit line.

**F2** character COPYTO Copy up to character in source line to edit line.

F3 COPYLINE Copy source line to edit line.

#### **F4** character SKIPTO Skip to specified character in source line.

F5 NEW TEMP

Copy edit line to source line to create a new source line.

#### **DEL** SKIP1 Skip one character in the source line.

- BACKSPACE Erase one character from command line.

# 

Save text to left of cursor, or execute command.

CTRL Z Leave insert mode.

ESC KILL Clear the edit line.

INS INSERT Enter and exit insert mode.

# EDLIN The Line Editor - ERROR Messages

Inter-Line Commands

#### EDIT LINE [ *line* | . ] Edit *line* or current line.

APPEND LINES

Add n lines from the input file on disk to the file in memory.

#### COPY LINES

[line-a], [line-b], line-c [, count] C Copy a range of lines to line-c count times.

# DELETE LINES

[ line-a ][, line-b ] **D** 

Delete a range of lines or current line.

DISCARD AND QUIT Quit EDLIN and discard the edited file.

# INSERT LINES

line [ . | # ] I

Insert lines of text before *line*, current line, or at end of file.



MOVE LINES

[ line-a ] , [ line-b ] , [ line-c ] M Move a range of lines to line-c

## PAGE

[ *line-a* ][ , *line-b* ] **P** Display a range and change current line.

# SAVE AND EXIT

Exit EDLIN and save the edited file.



#### SEARCH AND REPLACE [ line-a ][, line-b ] [?] **R** string-a [ **CTRL Z** string-b ]

Search range of lines and replace *string-a* with *string-b*.

#### TRANSFER LINES

[ line ] T [ filename ]

Transfer contents of *filename* before *line*.

WRITE LINES

[ n ] W

Write n lines from memory to disk file.

# **ERROR Messages**

Errors may occur when reading from or writing to devices and disk drives. These errors cause the system to stop and output a message of this form:

> type error action unit Abort, Fail, Ignore, Retry?

When you receive a message like this, enter either:

- A to Abort and end the program.
- F to Fail the current MS-DOS system operation and to continue with the next system operation; for example in a batch file.
- I to Ignore the error and try to continue, but you may lose data.
- R to Retry the program again.

# Warning

Do not change the diskette in the drive referred to, before pressing  ${\bf A}$  or  ${\bf I}$  or  ${\bf R}$  or  ${\bf F}$  as you will corrupt the new diskette.



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