nascom

Firmware Manual

NASPEN

2K Word Processor

for NASCOM Microcomputer systems

NM Part No. 229-300

Issue 2 Date. 8.2.80

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Philosophy behind Naspen

Naspen is designed for use with the Nascom range of microcomputers, fitted with 16K of RAM, and is available in two versions for either Nasbug T4 or Nas-sys monitors. Naspen is aimed at the small business user and home computer user who requires a high standard of presentation on fairly short pieces of text, drafts and repetetive letters. It is designed to be used by operators unused to computers and to this end its operation is kept as similar as possible to use of a typewriter in as much that all commands are single keystrokes with immediate action and with a display of exactly what is in the text file at any time (excepting wrap round of text on the screen). No parameters have to be given with any command. All text format details such as line length and page lengths are changed by single keystrokes incrementing or decrementing the existing value and displaying the new value. This approach is made possible by a repeat key funtion with a variable rate. Naspen has been designed to be simple to use by any typist or secretary untrained in the use of computers.

The screen shows the contents of the text file at any time and all text formatting is carried out in the text file and displayed as it would be printed. There is no need for complex print time format parameters to be used or understood giving considerable advantages to the part time user at only a slight loss of flexibility. The maximum ammount of text that can be worked on is limited by two factors, first the use of cassette tapes which are ideal for single letters but not practical for whole books and second the approach of a true real time display of the text. This implies a slowing of response for text inserts or deletes at the start of very long text files as the whole text is moved at every character change.

A flashing cursor can be simply moved to anywhere in the text and all commands take place at the head of the cursor. Variable rate scrolls and cursor movement is facilitated by a variable repeat rate easily changed by the operator. All the commands are chosen to relate to there operation by initial letter or some other visual prompt on the key except for the row of format keys at the top left of the keyboard. All formatting of text can be immediately reversed if a few simple rules are followed in entering text. The ability to reformat text is of great importance when changes have to be made to formatted text. Text can be saved on cassette tape and later retrieved or joined to text in the machine.

Searches for text strings are easily carried out under unusually effective and simple control by the operator. A full set of commands are included but initially a small subset is sufficient for most applications. Meaningful error messages are printed in case of mistakes and every precaution is taken to protect text in cases of mistakes or text buffer overflow.

If sensible automatic formatting of the text is not possible a message is displayed to that effect and the operator left to chose a suitable place to hyphenate the word with the text cursor pointing to the last possible place in the word.

To summarise Naspen is an exceedingly powerful and easy to use text processor in a small enough memory size to be practical as resident firmware, intended primarily for the small business and home computer user requiring a high standard of presentation for letters, short reports, stock and price lists etc.

NASPEN

Naspen is a program written for Nascom 1 and 2 microcomputers fitted with a minimum of 16K expansion, which gives the Nascom the ability store and edit text entered from either the keyboard or tape as required. Naspen is available in two versions:

VT for use with Nascom 1 microcomputers using Nasbug 1 T4 or B-Bug operating systems. It is not suitable for Nasbug T1 or T2.

VS for use with Nascom 1 or Nascom 2 using Nas-sys 1 operating systems.

Naspen is supplied in two preprogrammed 1K x 8 EPROMS and is assembled for use at memory locations B800H to BFFFH, in accordance with approved memory mapping for Nascom 2 microcomputers using Nas-sys operating systems.

Fitting Naspen

The two ICs supplied will be identified by the legends 'Naspen VT 1-1' and 'Naspen VT 1-2' for Nasbug or B-Bug versions, and 'Naspen VS 1-1' and Naspen VS 1-2' for Nas-sys versions. The -1 IC should be located at address B800H, and the -2 IC should be located at address BC00H.

When used with a Nascom 1 fitted with a series 1 memory card (identifled by the four EPROM sockets fitted), Naspen -1 IC should be fitted in the IC29 position, and Naspen -2 should be fitted in the IC30 position. EPROM enable input, P5, should be connected to decode pad 16.

If a series 2 memory is fitted to a Nascom 1, no provision is made for the fitting of EPROMs, and a separate 8K EPROM card must be used with the decodes alocated to pages A and B.

If Naspen is to be fitted to a Nascom 2 fitted with series 1 memory cards, the same procedure as for Nascom 1 fitted with series 1 boards may be adopted. If for some reason, the EPROM space on the memory card fitted to the Nascom 2 is already occupied, or a series 2 memory card is fitted, then Naspen may be mounted on the main board, the -1 IC and -2 IC being fitted respectively in IC37 and IC38 positions or IC41 and IC42 positions, assigning Naspen to either block A or block B. LKS1 and LSW1, switches 7 and 8 being selected as appropriate. Refer to the Nascom 2 manuals for details.

Executing Naspen

Naspen is initialized (cold start), by executing at address B800H, by typing:

Newline
E B800
Newline

This will place Naspen in the command mode, clear any previous text, and reset the lines and free space counters. If when using Naspen a return to the operating system is made, Naspen may be re-entered without reseting (warm start), thereby saving the current text, line counter and free space counter by typing:

Newline
E B806
Newline

Naspen will return with the same conditions as were pertaining at the time the entry to operating system was made.

Naspen command mode

On cold or warm start Naspen enters the command mode and displays a semicolon on the bottom line as a prompt. Naspen waits until a command letter is received (see lists of commands). On receipt of a command, the current command is displayed on the bottom line of the monitor screen, preceded by the semicolon, and will remain there until that command is complete, where upon, it will scroll to the line above. This is true of all commands except the 'R', 'V' and 'J' commands, where the scroll takes place immediately. Note that some commands are displayed as symbols. In this way there is always an indication of both what Naspen is currently doing, and the previous command. If only a semicolon is displayed on the bottom line, then Naspen is in the command mode awaiting a command.

Naspen monitor display

The Naspen monitor display may be likened to a window. The text is stored in the memory rather like a printed page, and the monitor screen is a window which opens on to it. The width of the printed page does not matter, if the width is greater than the window, the text is simply 'wrapped round' to the start of the next line. The window may be moved up or down over the text.

The top line of the monitor displays the caption "NASPEN", the version number, the line number where the cursor is currently at rest, and the ammount of memory avaliable unfilled.

The bottom two lines of the screen are reserved for the command status, and will be refered to as the command status indicator. It is not possible for Naspen to use the top line or the bottom two lines for any other purpose.

A flashing left arrow, which acts as the cursor is provided, which may be moved about within the text. Note that in the command mode the cursor is free to be located anywhere in the text, it is therefore possible to move the cursor out of the screen area. The cursor may be returned to the top left of the screen at any time by using the 'H' command.

In the command mode, the cursor is moved about the screen by using the cursor direction keys on the Nascom 2 keyboard, and the space bar, backspace, - and + keys for right, left, up and down movement on the Nascom 1 keyboard.

In the command mode the head of the cursor always 'points' to the place where any command will take affect, for example, when using the 'd' command, it is the character that the cursor points to which will be deleted. When using the 'I' command, the insert will take place at the head of the cursor, etc. In the instance of a command which takes effect to the right of the cursor, such as the format or kill commands, the character the cursor lies on is also affected. Characters to the left of the cursor are unaffected.

ALPHANUMERIC DESCRIPTION OF COMMANDS

A — Append to end of text file.

The 'A' command allows text to be added to the end of the text file. Upon execution of the 'A' command Naspen displays the last line of text in the file, with the cursor pointing to the next available typing position. Text may then be added to the file until terminated by an 'escape' (shift/newline), or until the text file memory is full.

If the last characters of the text file happen to be two or more 'newlines', then the display will be blanked as the cursor indicates the first typing position after the 'newlines'. If it is necessary to see the last line of text when starting to append, the 'A' mode should be left, the display scrolled to the end, and the 'i' command used. The 'd' command may be used to delete the 'newlines' if neccessary.

Normal keyboard functions, such as newline, space, backspace, etc, behave as they would on a typewriter. Additionally a tab is provided (up-arrow, shift/0) which spaces to the the next tab. The tabs are preset at intervals of eight.

After the tenth line has been typed, the monitor screen automatically scrolls upward to the start of the next newline. In view of this, it is advisable to type the occasional newline even when typing unformatted text in one continual string, as, if this is not done, it is possible for the text to be totally scrolled off the screen. However, no harm will result should this happen. Note that if one or more spaces are typed before a newline is typed irregular formatting may result, a newline should always occur immediately at the end of a word.

If the text file is almost full, care should be exercised in appending text, as formatting the appended text could, under extreme circumstances, expand the appended text by up to a quarter. This is due to the extra characters inserted by Naspen when formatting text. Under these circumstances, Naspen will 'lock out', and not allow further characters to be inserted which would increase the length of the text.

a — Find again.

The 'a' command is used in conjunction with the two 'Find' commands. It finds the next occurence, after the current position of the cursor, of the text string initially supplied by one of the 'Find' commands.

If no occurence is found from the current cursor position to the end of the text file, then the command status indicator displays the string stored in the 'Find' buffer, preceded by four question marks. The cursor remains at the last position before the search.

Having found the next occurence of the string, additional 'finds' may be achieved by using the 'newline' key. The action of the 'a' command is terminated by an 'escape' (shift/newline).

Note that there is no need to re-enter the text string when using 'a', but the command will not work unless a string has previously been entered by one of the 'Find' commands. If no string has been previously entered, the status indicator will display four question marks followed by rubbish.

C — Clear paging.

The 'C' command clears the symbols inserted into the text to act as print terminators after having formatted pages using the 'G' command. The 'G' command operates from the current position of the cursor to the end of the text file.

Note that the paging symbol is by default a 'bell' symbol (control/shift/g), which is the same as the print terminator symbol. Therefore the 'C' command will also remove any print terminator symbols that may have deliberately been introduced into the text. See 'G' command regarding the changing of the paging symbol if required.

c — Change a single character.

The 'c' command signals to Naspen that a single character is to be changed. This command would normally be used when correcting spelling mistakes, etc.

Move the cursor such that the head of the cursor points to the character to be changed. Type 'c', followed by the replacement character.

Caution: do not hold the keys down when using the 'c' command, as the auto repeat feature will cause the character held to be repeated, if this is a command character, some undesirable results will ensue.

D — Delete a line.

The 'D' command deletes the line of text from the head of the cursor to the start of that line. If the cursor is already pointing at the start of a line, the preceding line is deleted. The auto repeat feature may be used with this command.

If the text file is almost full, and a deletion is to be made towards the start of the text, some seconds may elapse before deletion is complete. Progress of the deletion may be observed on the monitor screen.

d — Delete a single character.

The 'd' command deletes the single character pointed to by the head of the cursor. This command is normally used for correcting spelling mistakes, etc. The auto repeat feature may be used with this command.

F — Find a text string.

The 'F' command is used to find the occurence of a string of characters within the text. The 'F' command always starts the search from the start of the text file.

Having executed the 'F' command, the command status indicator displays 'Find' and a flashing prompt. The text string to be found should then be entered (max 1 line). The backspace key works normally when entering the string, but take care not to backspace over the prompt. The 'Find' is activated by a 'newline'.

It should be noted that when finding a string of words in fomatted text, the number of spaces between words may have been altered by Naspen; as these changes may not be known, the text string entered may not exactly match the string in the text, hence causing the 'F' command to fail to find the string. Therefore the 'F' command should be confined to finding single word occurences in formatted text.

Having found the first occurence of the string, the piece of text containing the string is displayed on the monitor screen with the cursor pointing to the last character in the string.

Pressing 'newline' will cause the next occurence of the string to be found, and so on. If no occurence is found, the command status indicator will display 4 question marks, and the command will be terminated. 'Escape' (shift/newline) will leave the cursor pointing at the last occurence of the string and terminate the command. The auto repeat feature may be used with this command.

Having terminated the 'F' command, and edited the piece of text in question, the next occurence of the string from the current cursor position may be found using the 'a' command.

f Find a text string.
* ==========

The 'f' command is identical to the 'F' command, except that the search always starts from the current position of the cursor to the end of the text file. The auto repeat feature may be used with this command. Having terminated the command, the 'a' command may be used to find the next occurence of the text string.

G Generate paging.
* ==========

The 'G' command automatically inserts a symbol into the text a predetermined number of lines from the current position of the cursor. The symbol is always inserted at the end of a line, and the number of lines between occurences of the symbol is set by the '3 and 4' commands. This establishes the number of lines per page.

The symbol used by default is the 'bell' symbol (ASCII code #07, control/shift/g) which is the same symbol used by Naspen to indicate a print terminator. Naspen interprets (but does not print) the symbol, and terminates the 'P' command at that point.

In view of the warning given in 'C', it may be desirable to change the symbol to some symbol other than the print terminator. The code for the symbol is saved at memory location #1010, and contents of this location may be changed if so desired. The 'C' and 'G' commands both refer to this location to determine the symbol in use. However, if the symbol is changed, Naspen will no longer interpret this as a print terminator, therefore the printer handling software must be changed to interpret the symbol. On some printers, code #0A is interpreted as a 'new page' symbol, and this might prove a suitable symbol.

Note that the effects of the 'G' command are removed if any of the formatting commands are used after pages have been generated, as reformatting may well alter the page lengths.

H Home cursor.
* ==========

The 'H' command homes the cursor to the top left of the monitor screen, regardless of the current position of the cursor.

I Insert.
* =======

The 'I' command inserts text at the head of the cursor. All functions are as for the 'A' command. Insert mode is terminated by an 'Escape' (shift/newline).

Note that if the text file is nearly full, and that if text is inserted towards the start of the text file, then if the Nascom is running at 2 MHz, the maximum typing speed will be reduced slightly.

When inserting text, care should be taken to ensure sufficient space is left in the text file memory for reformatting.

If in doubt as to the space available, save the text file on tape before making an insert.

i Insert a single character.
* ==========

The 'i' command inserts a single character at the head of the cursor. This command would normally be used for correcting spelling mistakes, etc.

Move the cursor to the location where the insert is required. Type 'i', followed by the insert.

Caution. Do not hold the keys down, as the auto repeat feature may produce some undesirable results.

J Join a tape file.
* ==========

The 'J' command inserts a file from tape in front of the existing text file.

Caution. The 'J' command cannot check to see if there is enough room in the current text file memory to accomodate the two text files. If the text file memory is allowed to overflow, text will be lost. If in doubt as to the space available, save the existing text file on tape before attempting a 'join'.

If the 'J' command has been entered by accident, type four 'Escapes' to return to the command mode. This will have duplicated the text, and the appended copy may be deleted using the 'K' command.

K Kill text.

The 'K' command deletes all the text in the text file from the current cursor position to the end of the text file. As the effects of the 'K' command are irrevocable, this command is protected against accidental use. On execution of the 'K' command, the command status indicator displays 'KILL?', if you wish to continue, type 'Y', otherwise pressing any other key will abort the command.

L Format lines.

The 'L' command formats the text to a predetermined width commencing at the cursor to the end of the text file. The width is set using the '1 and 2' commands. Areas of text 'flagged' between a crossed tick (control/shift/u) and a tick (control/shift/f)are not affected. Formatting is done by automatically changing spaces to newlines or newlines to spaces such that the line length does not exceed the predetermined width. Two consecutive newlines will be treated as a paragraph and will not be affected. Using the 'L' command, Naspen does not attempt to insert speces into the text to equalise the width, hence lines will most likely be of unequal length.

Words separated by two or more consecutive spaces set up using the space bar or tab are treated as a single words, and are usually unaffected by the 'L' command. However, after formatting, it would be prudent to check if this has occurred.

If Naspen is unable to format a line, because a word is longer than the line width, or because there are too many consecutive spaces in the line, the command is terminated at that point. The monitor screen displays the line in question, with the cursor pointing one space beyond the position in the line where Naspen 'thinks' the word should be hyphenated and a space inserted; the command status indicator displays a message to the effect that Naspen is unable to format the line.

Naspen does not automatically try to hyphenate words itself, as unfortunate misspellings of words could result. Operators are left to edit the line as required, having done so, the 'L' command may be repeated, after repositioning the cursor to the start of the line where the edit has been made using the '-' command.

M Move a block of text.

The 'M' command is used to reposition or repeat blocks of text. The start of the block of text in question is bracketed with an opening squiggly bracket (control/+), and the end of the block is bracketed with a closing squiggly bracket (control/shift/-), which may be inserted using the 'I' command. The cursor is moved to the desired insert location, and the 'M' command executed. The text is inserted at the head of the cursor.

The original text is not destroyed by the 'M' command, and may be deleted by the 'D' command, or the squiggly brackets removed by the 'd' command if the text is still required.

Note that if a long block is to be moved, the insertion process will move off the monitor screen. This is normal, and the command status indicator will indicate when the move is complete by the displayed 'M' scrolling up one line.

If the text file is fairly full, the move process may take some seconds to complete. Secondly, care should be taken to ensure that sufficient space is available for the move. The move is treated as an automatic insertion by Naspen, and it is possible to cause the text file memory to overflow. Under these conditions, the whole of the block will not be inserted.

N Revert to Nasbug or Nas-sys.

This command returns the control of the Nascom to the system monitor. This command should only be used to examine the memory, or the program pointers or workspace.

If the command is executed by accident, control may be returned to Naspen by typing newline, E 8806 immediately after the monitor prompt symbol (a '>' in the case of Nasbug, or a flashing '-' for Nas-sys), newline.

P Print.

The 'P' command outputs the contents of the text file from the current position of the cursor to the end of the text file or the next print terminator, whichever occurs first. Text is preceded by a control character (00H) which may be used by the printer control software to initialize the printer, however, most printers will not require (and therefore ignore) this control character. Text is terminated with a control character (02H) which may be used to turn off the printer, similarly, most printers will not require, and therefore ignore this control character.

The printer routines are reflectively addressed at a locations 101D to 101FH in the Naspen work area. Normally this reflection points to the monitor serial output routines (a call to XOUT followed by a return in Naspen VS, or an immediate jump to SRLX in Naspen VT). The reflection may be changed to suit the user's printer handling software provided the following are observed: all registers should be preserved by the routine, which should terminate with a normal Z80 RET instruction. Stack space is available to the printer, to a depth of 16 bytes on the Naspen stack. Note that as the reflection is saved in the Naspen work area the reflection is always saved on tape, therefore there is no need to reload the reflection when reloading tapes. However, by the same token, care should be taken when transporting tapes from one machine to another, as the printer handling software may require different reflections.

When Naspen encounters a 'bell' symbol (ASCII code #07, control/shift/g), the 'P' command is terminated. The 'bell' symbol may be inserted into the text at any point to stop the printer to allow for changing sheets of paper, or in the case of a Golfball printer, to change the typeface, etc.

When the 'P' command is terminated by a 'bell' symbol, the cursor is left at the start position. Hence, if the printer is to be allowed to continue from the termination point, the cursor must be placed with the head pointing to the symbol. The symbol may easily be found using one of the 'Find' commands, which will leave the cursor in the correct position. If the default paging terminator (control/shift/g) is used, the '9' command may be used instead. However, if the '9' command is used, and the printer control software does not interpret the preceding control character as a newline, printing will recomence where the printing head was last left; unless either a manual carriage return on the printer or a cursor backspace on Naspen is implemented.

R Read a tape.
= ============

The 'R' command selects the 'R' command in Nasbug/Nas-sys, and allows a previously recorded file to be re-entered into Naspen. The tape file also contains part of the Naspen workspace, so that all the conditions set up at the time of recording are restored (such as characters per line, lines per page, printer reflection, repeat speed, position of the cursor, etc.)

Rewind the tape to the start of the file, type 'R' and wait for the coded header to be displayed. After a moment or two the command status indicator will display '100F xxyy', after a few seconds, depending on the tape loading speed of the Nascom, the status display will indicate the coded header for the next block of text, this will be '110F xxyy'. Note that 'xxyy' are indeterminate depending upon the length of the text file.

The tape will continue to be loaded, displaying consecutive coded block headers until the file is complete. If at any time the word 'Error' is displayed adjacent to a block (or in the case of Nas-sys, a question mark), then an error has occured during loading. Stop the tape recorder, rewind about two blocks, and restart the tape.

If 'R' is entered accidently, four 'Escapes' (shift/newline) will return Naspen to the command mode.

$ Spread the text (after formatting).
= ==================================

When text has been formatted using the 's' command, and in consequence left/right justified, spaces have been inserted into the text, and, if at a later date it is required to delete or insert text into a block of formatted text, then before reformatting, the additional spaces originally added must be removed.

The 'S' command operates from the current position of the cursor to the end of the text file. It does not affect text before the cursor.

The 'S' command first removes extra spaces by executing the 'X' command before reformatting using the 's'. In using the 'S' command, two consecutive newlines are interpreted as the start of a new paragraph, and are left unformatted. Spaces following two newlines are not affected to allow for indented paragraphs, and two or more spaces added in the form of tabs, etc, are usually unaffected. However, it would be prudent to check that this has been the case after using the command.

Read the descriptions of 'L', 's' and 'X' commands for full details of the operation of the formatting commands.

s Spread the text.
= ================

The 's' command formats the text to a predetermined width set up by the '1 and 2' commands. Unlike the 'L' command, this command also inserts additional spaces into the text such that all lines are of the same width. Two consecutive newlines are treated as a paragraph and are left unaffected.

The 's' command inserts spaces starting at alternate ends of each consecutive line. This gives the text a pleasing appearance. The command does not insert more than one extra space between each word, and does not add spaces to blocks of two or more spaces already in the text, leaving tabs, etc, unaffected.

If there are too few single spaces in a line for the Naspen to pad it out, or if a word is longer than one line, the 's' command is terminated. The monitor displays the text in question, with the cursor pointing to the end of the offending piece of text. The command status indicator puts out a message to that effect. Naspen does not attempt to insert extra spaces or hyphenate words. It is left to the operator, to adjust the text for the best possible appearance. See the details of the 'L' command.

V Verify a tape (VS only).
= ==========================

The 'V' command calls 'V' in Nas-sys which, when a previously recorded file is replayed, verifies the data on the file. Using this command, faulty tapes or recordings will be detected. The display format is as for 'R', except in this case, the replayed file does not replace or in any way effect the existing text file.

If 'V' is used immediately after writing a file to tape, then the tape may be rerecorded if any errors occur. If 'V' is entered accidently, enter four 'Escapes' (shift/newline) to return to the command mode.

W Write to tape.
= ==============

The 'W' command is used to write the text file to tape. The text is sent in a coded form in blocks of 256 characters. The blocks are preceded by coded headers, which give the location in the Nascom memory, the number of characters in the block, and a checksum which uniquely identifies that block. If any error occurs on replay of the tape, the checksums will not match, and an error indication is made.

To 'Write' to tape simply turn on the tape recorder and type 'W'. The tape load light will be lit, and approximately 2 seconds later, the coded headers will be displayed and scrolled up the screen as they are sent to the tape recorder. Naspen will revert to the normal display mode when the 'Write' is complete.

X Compress text.

The 'X' command removes the additional spaces added when using the 's' command, this is neccessary when reformatting the text after an insertion, which would make a line longer than the predetermined length. The 'X' command does this by scanning the lines in turn, and where it finds two adjacent spaces (but not more than two) removes one of them on the assumption that the space was added by the 's' command.

As the 'X' command removes one space (but no more than one) from each pair of spaces encountered, deliberately inserted tabs or pairs of spaces may be affected, it is therefore prudent to check that tabs, etc, are still as required.

Note that if pages have been formatted using the 'G' command, the paging symbols will be cleared, as on reformatting, these would normally be incorporated in the formatted text, giving rise to an irregular appearance.

Y Yes. (See Kill command).

Z Zero text and cursor.

The 'Z' command returns the cursor to the start of the text file, and also displays the start of the file on the monitor screen.

This would normally be used when one of the fomatting commands is to be used, and is a convenient way to return to the beginning of the text.

1 & 2 Alter line length.

The '1' command decrements the line length by one. The line length defaults to 72, which is a convenient length for a printer printing 10 characters to the inch on A4 or foolscap paper.

The command status indicator displays the line length. The auto repeat feature may be used with this command.

The '2' command increments the line length by one and works identically to the '1' command.

3 & 4 Alter page length.

The '3' command decrements the page length by one. The page length defaults to 68, which is a convenient length for use with foolscap paper.

The command status indicator displays the current line length. The auto repeat feature may be used with this command.

The '4' command increments the page length by one, and is used in the same fashion as the '3' command.

5 & 6 Alter repeat rate.

The '5' command decrments the repeat rate counter which determines the speed at which the cursor 'blinks', and the rate at which repeated characters are returned. The '5' command increases the repeat speed. The default value is 7, which will suit most operators using systems running at 4 MHz.

The command status indicator displays the repeat rate. The auto repeat feature may be used with this command.

The '6' command increments the repeat rate counter, thus decreasing the repeat speed, and works identically to the '5' command.

8 & 9 Step pages.

These commands are inoperative until pages have been formatted using the 'G' command. The '8' command skips backwards through the text file from the current cursor location to the start of the text file. The monitor displays the start of each page generated by the 'G' command.

The '9' command skips forward from the current cursor location to the end of the text file in the same fashion as the '8' command.

The auto repeat feature may be used with these commands.

Note that a convenient way of editing text is to set the page length to 10, generate pages, then use these commands for skipping through the text 10 lines at a time.

If the default print terminator symbol has been used, it is possible to use the '9' command to reposition the cursor during a print operation, but see the note under 'P'.

+ & - Move cursor one line.

The '+ & -' commands are cursor control commands. On Nascom 2 they are duplicated by the 'down arrow' and the 'up arrow' cursor control keys respectively. The '+' (or 'down arrow') command moves the cursor to the start of the next line. The lines counter displays the current line the cursor is on.

The '-' (or 'up arrow') command moves the cursor back to the start of the previous line.

The auto repeat feature may be used with both these commands.

Note that these commands operate even if the cursor is not displayed on the monitor screen.

< & > Move cursor 10 characters.

The '< & >' commands are cursor control commands, they move the cursor 10 characters to the left or right respectively. These commands are useful in positioning the cursor in unformatted text.

The auto repeat feature may be used with these commands.

SP & BS Move the cursor one character.

The space and backspace are cursor control commands. They are duplicated by the 'right arrow' and the 'left arrow' cursor control keys on the Nascom 2. They move the cursor one character to the right and left respectively.

The auto repeat feature may be used with these commands.

(&) Move displayed text one line.

The '(&)' commands are display movement commands, they scroll the displayed text down and up one line respectively. The cursor remains on the same line thoughout the use of these commands. These commands are useful when examining unformatted text.

The auto repeat feature may be used with these commands.

NL & Shift NL Scroll displayed area one line

The 'new line' and the 'escape' (shift/newline) keys move the displayed text up or down one line respectively. These commands are similar to the '(and)' commands, save that the cursor will remain on the monitor screen. The lines counter being incremented or decremented with the movement of the displayed area. As these two commands operate between 'newlines' within the text, their operation within unformatted text will be unpredictable, to the extent that if there were no 'newlines' within the text, they would not work at all.

Control symbols

Certain symbols are used to control the action of Naspen, either in the formatting editing or printing modes. These symbols are inserted into the text as required.

control/shift/g 'Bell symbol'
Print terminator, used to stop the printer at a predetermined point within the text. Also inserted by default when using the 'G' command.

control/shift/u 'Crossed tick symbol'
Formatting delimiter, used to signal to Naspen that the following text is not to be formatted.

control/shift/f 'Tick symbol'
Used to signal to Naspen that formatting may recomence after a formatting delimiter.

The area enclosed between the 'crossed tick' and the 'tick' will not be formatted by Naspen.

control/+ 'Opening squiggly bracket'
Used to signal to Naspen that this is the start of a block to be moved.

control/shift/- 'Closing squiggly bracket'
Used to signal to Naspen that this is the end of a block to be moved.

The area enclosed within the 'squiggly brackets' may be moved at will using the 'M' command. These brackets should be edited out after use.

Note that generally it is not possible to make use of the 'M' command whilst the cursor is within the area enclosed by 'squiggly brackets'.

Workspace used by Naspen.

This section will only be of interest to those familiar with the programming of Nascom Micro Computers, and Z80 assembly code in general. Memory locations given in HEX.

Area saved on tape

100F Repeat rate store
1010 Symbol to be used by 'C' and 'G'
1011 Page length store

1012) Soft limit of text file buffer
1013)

1014) Start of screen 'window'
1015)

1016) Current cursor location on screen
1017)

1018) Current cursor location in text buffer
1019)

101A) End of text pointer
101B)

101C) Characters/line store

101D) Printer reflection
101E)
101F)

The text file runs from 1020H and is terminated with code 20 FFH. Should the text buffer be indequate for a move or join, the space available may be increased by altering the contents of memory locations 1012H and 1013H, provided adequate RAM is available. After the 'Join', the RAMTOP pointer will have been reset, and will require further adjustment if the 'Joined' text is to be used. Note that increasing the RAM available to Naspen will result in reduced speed using the 'M' command, and if taken to extremes will result in noticeably slower key entrys when inserting at the beginning of a text file.

Examples of use

The following examples of use are given to demonstrate the potential of Naspen, and as examples of the way in which Naspen is used.

The screen format of the Nascom microcomputers is 48 characters wide by 16 lines deep. The Naspen display reserves the top line for line and memory space information, and the bottom two lines for the command status and error messages.

The following examples are based on two paragraphs from a manual on disc systems. On initialization, Naspen will display a blank screen, and indicate that the cursor is on line 1, and that 12000 bytes of memory are free. Type a capital 'A', and note that the bottom line of the screen now displays the legend 'Appending Insert'. Now type in the following text, do not use the newline key except between paragraphs 7.1 and 7.2, where two 'newlines' are required. When the newlines are entered between the two paragraphs, note that the screen clears. Do not be detered by this, read the note under command 'A'. As you type, notice that the text 'wraps round' the screen when words overflow into the next line. The text below is printed exactly as it would appear on the screen. When the passage is complete, type an 'Escape' (shift/newline).

```
7.1 The SA 400 drive uses the double frequency
 (2F) longitudinal non return to zero (NRZI) me
thod of recording. Double frequency is the term
 given to the recording system that inserts a c
lock bit at the beginning of each bit cell time
 thereby doubling the frequency of recorded bit
s. This clock bit, as well as the data bit, are
 provided by the using system. See figure 18.

7.2 The read/write head is a ring with a gap a
nd a coil wound some point on the ring. When cu
rrent flows through the coil, the flux induced
 in the ring fringes at the gap. As the diskette
 recording surface passes by the gap, the fring
e flux magnetizes the surface in a longitudinal
 direction. See figure 19.
```

The top line of the screen should now display:

"NASPEN" VS.1 LINE 00003 11316 FREE

assuming that the passage has been copied letter for letter, space for space. Do not worry if the passage has not been copied identically.

The next exercise is to format the text to a given size. In this instance, to use the 'L' command, and to set the width to 44 characters per line.

The 'L' command will search each line in turn, counting the number of characters. When the number of characters in one line exceeds the given number, the 'space' between the word which overflows the line, and the word preceding it is changed to a 'newline'. Thus the text is split up into the required length. As the number of characters per word in each line is almost certain to be unequal, the right hand side of the display will take on an irregular appearance but displaying complete words such that the line does not exceed the 44th character.

Use the '1 and 2' commands to set the width, then type 'Z' to home the text and the cursor to the top of the screen. Now use the 'L' command. The display will be as follows:

```
      "NASPEN" VS.1 LINE 00001 11316 FREE
7.1 The SA 400 drive uses the double
frequency (2F) longitudinal non return to
zero (NRZI) method of recording. Double
frequency is the term given to the
recording system that inserts a clock bit
at the beginning of each bit cell time
thereby doubling the frequency of recorded
bits. This clock bit, as well as the data
bit, are provided by the using system. See
figure 18.

7.2 The read/write head is a ring with a
gap and a coil wound some point on the
;L
;
```

The text has now been set up to the required width. Note the last command is still displayed above the bottom line of the screen. Naspen has returned to the command mode waiting for the next instruction.

The next exercise is to left-right justify the text using the 's' command, at the same time reducing the width to 40 characters per line. It should be noted that if left-right justification were required from the outset, the 's' command should be used without recourse to the 'L' command. Set the width using the '1 and 2' commands, return to the start of the text using the 'Z' command, and type 's'. Note that Naspen stops with the display thus:

```
      "NASPEN" VS.1 LINE 00007 11307 FREE
cell time thereby doubling the frequency of rec
orded
bits. This clock bit, as well as the data
bit, are provided by the using system. See
figure 18.

7.2 The read/write head is a ring with a
gap and a coil wound some point on the
ring. When current flows through the coil,
the flux induced in the ring fringes at the
gap. As the diskette recording surface
passes by the gap, the fringe flux
magnetizes the surface in a longitudinal
 ;s   Too few single spaces in line
;
```

Note the error message displayed on the second to last line. This indicates the need to hyphenate a word. When Naspen indicates that hyphenation is neccessary, the operator must insert the hyphen at an appropriate point, or insert additional spaces into the line to achieve the required appearance.

The cursor is indicating the point where it 'thinks' a hyphen should be inserted. As this not really convenient, backspace so that the cursor is resting on the 'q' (pointing to the e), then using the 'i' command, insert a hyphen, then a space. Use the '-' command to position the cursor at the start of the line, then use the 's' command again. Again Naspen stops, this time at the 'g' of figure. As hypenating this word is somewhat inappropriate, two additional spaces are inserted before 'See', the cursor returned to the start of the line using the '-' command, and the 's' command used again.

```
      "NASPEN"  VS.1  LINE 00001  11265 FREE
7.1 The SA 400 drive uses the double
frequency (2F) longitudinal non return
to zero (NRZI) method of recording.
Double frequency is the term given to
the recording system that inserts a
clock bit at the beginning of each bit
cell time thereby doubling the fre-
quency of recorded bits. This clock
bit, as well as the data bit, are
provided by the using system.  See
figure 18.

7.2  The read/write head is a ring with
;s
;
```

What has happened is that Naspen has taken the number of characters per line as with the 'L' command, but instead of inserting newlines short of the final count per line, it has added one (but no more that one) additonal space after each space found in the line. If there were insufficent spaces, Naspen did not add further spaces, but requested hyphenation or some other form of editing of the line to equalise it. The additional spaces occur at opposite ends of each line to give the text a pleasing appearance. The memory free indicator has also changed to take account of the additonal spaces inserted by Naspen, and the number of lines in text has been increased as the lines are now shorter. Note that after each formatting command, Naspen returns to the start of the text.

So far, the formatted line length has not exceeded the width of the display. In the next instance, the text will be reformatted to 72 characters per line. There is one major requirement when reformatting: the additional spaces inserted by Naspen previously may no longer be required. Hence these should be removed before the 's' command is used again. A command is provided which will remove one space from two (but no more that two) consecutive spaces. This is the 'X' command. However, as this form of reformatting requires the use of the 'X' command, followed by the re-use of the 's' command, another command may be used. This is the 'S' command, which automatically uses the 'X' command before reformatting using the 's' command.

The hyphen in frequency and the two additional spaces before 'See' should also be removed, as these to will probably not be required. Use the 'd' command to delete them.

Set the line length to 72 using the '1 and 2' commands, return to the start of the text using the 'Z' command, and type 'S'.

```
      "NASPEN"  VS.1  LINE 00001  11311 FREE
7.1 The SA 400 drive uses the double frequency
 (2F) longitudinal non
return to zero (NRZI) method of recording. Doub
le frequency is the term
given to the recording system that inserts a cl
ock bit at the beginning
of each bit cell time thereby doubling t
he frequency of recorded
bits. This clock bit, as well as the data bit,
  are provided by the
using system. See figure 18.

7.2 The read/write head is a ring with a gap an
;S
;
```

The text has been reformatted to 72 characters per line, with the lines now 'wrapping round' alternately. One undesirable affect has occured however, the two spaces immediately following the paragraph numbers have been reduced to one space as an affect of the use of the 'S' command. As this did not effect the visual appearance of the text the affect is of minor importance, but serves to emphasise the point that the 'S' (and 'X') command will remove one space when ever two (but no more than two) consecutive spaces occur. If the paragraph indents were required, three spaces should have been used instead of two as three consectutive spaces would not have been affected.

Using the 'I' command, re-insert two additional spaces behind the paragraph numbers, making three spaces in all, then, having 'Zeroed' the text, reformat the text using the 'S' command. Note that this time the spaces are unaffected.

To prove that the text has been unaffected by the manipulations performed upon it, remove the additional spaces inserted by the 's' and 'S' commands, using the 'X' command, not forgetting to 'Zero' the text first. Note that all double spaces have been converted to single spaces. Now reset the 'Characters/line' to 44, using the '1 and 2' commands, and format the lines using the 'L' command. It will be noted that the text is back in the original form, displayed after the previous 'L' command (except of course for the additional space after each paragraph number).

Now move the cursor down to the start of line 5 (as indicated by the 'LINE' indicator on the top line of the screen). Insert (using the 'I' command) a 'crossed tick' (Control/shift/u). 'Zero' the text, and reformat using the 's' command. Note that the first 5 lines of text, up to the 'crossed tick', have been left-right justified. The remaining text has not been affected.

Insert a 'tick' (control/shift/f) in front of the second paragraph number, and reformat again. Notice that this time only the area of text enclosed within the 'crossed tick' and the 'tick' has remained unaffected. These two characters, known as control flags, are provided so that areas of text will remain unformatted and are useful for tables, etc.

An interesting exercise (if nothing else) would be to move the area enclosed within the 'ticks' to another location within the text file memory. Type 'F' followed by control/shift/u, newline. The cursor will be pointing to the crossed tick, having made use of the 'Find' command to locate it. Naspen is still in the 'Find' mode, and if newline were typed again, would continue its search for the next occurence of a 'crossed tick'. As there are no further occurences, this is pointless. Type 'Escape' to leave the 'Find' mode. Type 'c' followed by 'control/;', this changes the 'crossed tick' into an 'opening squiggly bracket'. Find the tick, and change this to a 'closing squiggly bracket' (control/shift/-).

'Zero' the text, then type 'M'. The text enclosed within the brackets is moved to the top of the screen. Being inserted in front of the cursor. When the 'Move' is finished, Naspen returns to the command mode, leaving the original piece of text unaffected.

Appendix I

General principles of formatting by Naspen

1. All formatting starts at the current cursor position.

2. Two successive newlines are recognised as the start of a paragraph, all formatting is reset and the last line left short.

3. Formatting can be halted, for example at the start of a table, by including a "not tick" symbol in the text.

4. Formatting can be restarted after tables, etc, by including a "tick" symbol in the text.

5. "Tick" and "not tick" symbols may be at the start of a paragraph, ie after two newlines.

6. Spaces are only inserted beside single spaces when justifying text and only one extra space will be inserted. Successive lines are padded from left to right then right to left.

8. Newlines are only inserted to replace newlines or spaces in the text. Newlines and spaces in the original text are in general equivalent. This means that space - newline or newline - space will be first changed to space - space and then not modified. This means that one should not put spaces at the end of a line.

9. Two words with more than one space between them will be counted as a single block to allow the user to deliberately include gaps. This may lead to difficulty in formatting if enough single spaces are not left, and the limit the composite words may be longer than a line. Blocks for indenting at the start of a paragraph are normally OK even with short lines.

10. If there are too few spaces an error message is produced and the offending line put at the top of the screen with the cursor pointing to where the line should be ended, Naspen does not format the line before stopping. The operator can then change the line and restart formatting AFTER returning the cursor to the start of the line using the "-" command.

11. If text has been right justified by "S" or "s" and changes have to be made the extra spaces need to be removed. The compress command "X" does this by reducing ALL occurances of double spaces to single but does not change 3 or more spaces. Double spaces should be avoided during initial text entry to allow "X" to be used without changing your text. (Newline-space and space-newline is also likely to result in double spaces being produced during formatting).

12. "X" leaves the cursor where it was.

13. "S" calls "X" automatically "s" does not.

14. "X" uses the "tick" and "not tick" symbols as in "S" "s" and "L".

15. "S" "s" and "L" also call "C" Clear to remove all paging symbols before operation.

16. Sufficient space should be left for formatting in the buffer. If the buffer is filled text will normally not be lost but the end of the text will not have the correct line lengths.

Appendix II

Extensions by the machine code user

The text formatting in Naspen is more than powerful enough for most small business users. However it is in the nature of the home computer user that he will wish to extend the facilities available, by, for instance, producing a facility for double column printing or some other print time change highly specific to his printer. The suggested mechanism is to trap printer calls at the reflection then print the text using the start and end locations in the workspace and to use the page length and and line length stores to pass any other parameters. Do not return at the end but use a warm restart to reset the stack etc.

If you risk modifying the text file itself note that the new end of text must be set in the workcpace and that the text must end with 20 FFH. The space is required for the cursor when at the end of the text.

Two non printing characters are sent at the start (00H) and end (02H) of the text. These can be used to turn printers on and off line, initialise printers such as the golfballs which require flyback time or can be used in conjuntion with newlines to double buffer printer output for unusual printers.

If special print or format parameters are used, an easy way of restoring them when generating new text if to record a tape with an empty text file, with the special parameters set. Using the 'Join' command will insert the parameters into the text file as required. Note though, that an additional space will be inserted in the start of the existing text. To avoid the additional space, the parameters may be writden to the tape using the monitor 'W' command, eg:

```
W 100F 1020
```

This tape could then be replayed using the 'R' command in Naspen, prior to composing the text.

The areas C00H to CFFH and E00H to F3FH are unused by Naspen and can be used for printer handlers and other extensions in addition to the store above the top of the text buffer. Unusual and useful print time extensions not involving modifications to Naspen firmware should be sent to the INMC.

Appendix III

Recovery from an accidental cold start

Text can be recovered after an accidental cold start instead of a warm start if the following proceedure is adopted. We all make mistakes sooner or later.

1. Leave Naspen using "N" immediately

2. Enter M 101A (newline)
   The screen will display
   101A 21 (with a '>' prompt if Nasbug)
   type 12 10 2. (newline, note the fullstop).

3. Re-enter Naspen using warm start.

4. Do not despair when you see a blank screen and 0 free space. Hit space bar twice and all will be revealed.

5. Delete the two initial rubbish characters.

6. Step to the end of your text using "enter" and "space" only. Do not pass the end of your text.

7. Enter "K". Free space is now correct.

8. The number of characters per line is now incorrect, similary the page length. Reset these, and you can continue after remembering to replace the two characters at the start of the text.