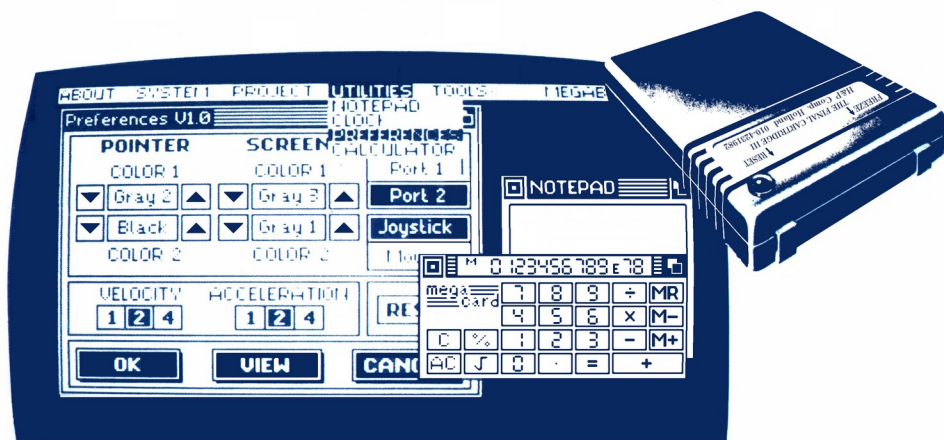




KEEP IT SIMPLE!



INSTRUCTION MANUAL



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Product concept and realisation:

Desktop and menus:

Tools, freezer, fastloader and printer interface:

Supporting software:

Hardware design:

Manual:

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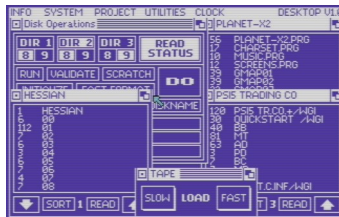
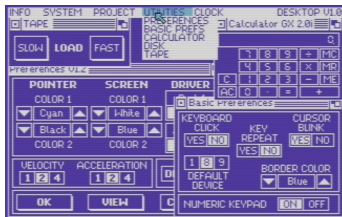
PREFACE

The Final Cartridge III is an original development of Riska B.V. Home & Personal Computers.

The Final Cartridge III, consisting of 64K of machine code, offers you, in addition to the DESKTOP in which everything works with WINDOWS, among other things:

- I. Various convenient aids for programming (the so-called BASIC TOOLKIT).
- II. Very simple disk commands.
- III. 24K of extra memory in BASIC.
- IV. A tape fastloader/fastsaver that speeds up the tape functions 10 times
- V. A disk fastloader/fastsaver that speeds up the disk drive functions 15 times.
- VI. A very comprehensive machine language monitor that enables you to examine the entire memory of the computer.
- VII. A disk monitor.
- VIII. A very comprehensive printer interface that even enables you to print the Commodore graphics on Centronics parallel printers, and to make high-resolution screen dumps as well.
- IX. A built-in game trainer.
- X. A RESET facility. Combined with the OLD command, this ensures that you will never lose a program again after a RESET or a NEW.
- XI. The ability to interrupt any program that is in memory (FREEZER) in order to then:
 - Continue with it again (a kind of pause facility)
 - Make a backup of it, which can even be loaded again without the Final Cartridge III.
 - Make a low- or high-resolution screen dump of it that even prints the sprites that are present on the screen.
- XII. A built-in word processor, the Notepad.

The user interface, windows and pull-down menus are based on ideas applied in, among others, the Apple Macintosh and the Commodore Amiga.



INSTALLATION

!!! NOTE !!!

COMMODORE 64

Insert the Final Cartridge III into the cartridge port of your computer with the label facing upwards. You can then switch on the computer and the other peripherals as you are accustomed to.

COMMODORE 128

Insert the Final Cartridge III into the cartridge port of your computer with the label facing upwards. You can then switch on the computer and the other peripherals as you are accustomed to. Your Commodore 128 will now start up in Commodore 64 mode.

By pressing the reset button on the Final Cartridge III you enter Commodore 64 mode. If you press the reset button of the Commodore 128 itself, you enter Commodore 128 mode. It is therefore not necessary to remove the Final Cartridge III from the computer if you want to work in CP/M or Commodore 128 mode.

If you simply switch on the computer with the Final Cartridge III inserted, it will start up automatically in the DESKTOP. This mode is described in the chapter Desktop.

If you want to work directly in BASIC, hold down the **RUN/STOP** key while switching on the computer.

If you receive no message and, after pressing the reset button, nothing appears on the screen, the Final Cartridge III is probably not properly seated in the computer.

With older types of computer it may be necessary to press the reset button (possibly in combination with **RUN/STOP** or **C**) after the computer has been switched on, in order to start up the Final Cartridge III.

!!! SEE ALSO THE CHAPTER ANNOTATIONS!!!

INTRODUCTION

We have tried to keep the manual as complete and clear as possible for you; that is why we have provided a very comprehensive table of contents which makes searching in this manual very easy.

We begin with the chapter `WINDOWS & MENUS`; this explains – as the name already says – windows & menus. This chapter is intended for people who have never worked with these things before. In this chapter we try to provide you with all the necessary information, after which you can easily follow the rest of the manual without any problems.

Then follows the chapter `DESKTOP`; this discusses the Desktop. From the Desktop all the possibilities of the Final Cartridge III can be called up, and so everything could be discussed in this chapter, but to keep things clear, four separate chapters have been created.

Those separate chapters are:

<code>TOOLS</code>	in this, the Notepad, Desktop Utilities and Printer Selections are discussed.
<code>FREEZER</code>	in this, all the possibilities that the freezer offers you are discussed.
<code>BASIC</code>	in this, all the possibilities that the BASIC extended by Cartridge III offers you are discussed.
<code>MONITOR</code>	in this, all the possibilities that the monitor offers you are discussed.

WINDOWS & MENUS

INTRODUCTION

Most functions of the Final Cartridge III can be controlled by means of Windows & Menus. This chapter gives general explanations about working with Windows & Menus. Those who are already familiar with Windows & Menus can skip this chapter and go straight to the chapter Desktop; later they can always read a few important parts of this chapter again.

GENERAL TERMS AND TECHNIQUES

THE USE OF THE POINTER

After the Final Cartridge III has been started up, an arrow appears on the screen. We call this arrow the pointer. The pointer follows on the screen the movements that you make with the joystick or with the mouse. If you possess neither, you can imitate a joystick with the help of the keyboard:

-  : upwards
-  : downwards
-  : to the left
-  : to the right
-  : the fire button

Although we have made it possible to control the pointer through both joystick ports, we strongly recommend that you use port 2. Unfortunately we can also do nothing about the fact that some mice block the keyboard (this is a defect in the hardware of the mouse), which sometimes makes it necessary for you to remove the mouse from the computer when you want to use the keyboard.

If the pointer moves too fast or too slowly, or if you do not like its colour, you can change these settings from Preferences. This is explained further on under Preferences.

CLICKING AND SELECTING

Most commands of the Final Cartridge III are chosen by pointing at the relevant command on the screen and then pressing the fire button of the joystick or the mouse; this is called clicking.

When a command is chosen by pointing at it and clicking, we call this selecting.

MENUS

INTRODUCTION TO MENUS

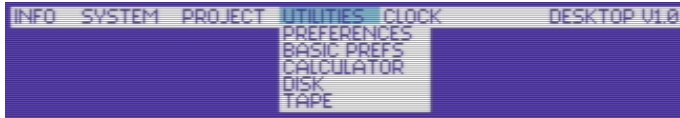
A menu is a list of different functions that is called up by means of the pointer and the fire button.

At the top of the screen you will find:



In this menu bar the various titles are listed, from which you can make a choice at that moment.

To browse through the menus, move the pointer through the menu bar while holding the fire button down. Every time you point at a title, the corresponding menu will appear.



We call the possibilities items. In some menus not all items can always be chosen. Those items that you cannot choose appear in ghost-mode; as a result those items are displayed faded.

To choose one of the items, move the pointer, while still holding the fire button down, onto the item you wish to choose. By then releasing the fire button, you select the item.

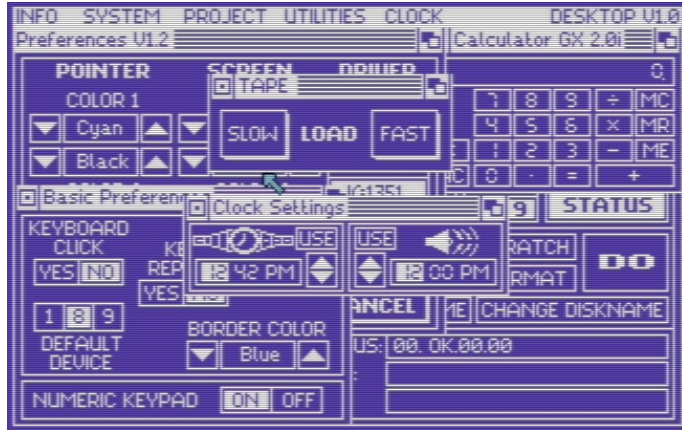
COMMANDS AND OPTIONS

Two different kinds of items occur in menus. Commands are items that you choose to perform an action. For example, Calculator is a command (and therefore also an item) in the Utilities menu. Options are choices that keep working until they are switched off again. For example, Time is an option in the Clock menu (as long as Time is chosen, the time appears in the menu bar). If you have switched on an option, you can see this by the fact that a flag is placed in the menu behind the item. To switch the option off again, select the option once more, after which the flag disappears.

WINDOWS

INTRODUCTION TO WINDOWS

You can imagine windows as pieces of paper scattered over the screen. A piece of paper contains, for example, the directory of a diskette. You lay another piece of paper on top of it that contains the directory of a second diskette. When the second piece of paper is now removed, the first one becomes visible again; and this is how it works with the Final Cartridge III as well. Later in this section a few techniques for manipulating windows are discussed, but for the moment it is sufficient to know that every window — and more of them fit on the screen than you would expect — can contain as much information from the computer as one single screen of the standard Commodore.



The ability to show several windows simultaneously on the screen is, for example, very useful when you, while the directory is being displayed on the screen in one window, want to carry out a few calculations with the calculator in the other window.

You should note, however, that although several windows can be on the screen, you can only work with one window at a time.

We call that window the selected window, and it can be recognised because a window that we select always comes to the front. The other windows that are on the screen at that moment are not active and are therefore behind the selected window. You now have the ability to make another window active by simply moving the pointer somewhere inside this window and clicking.

To return for a moment to our example. If the directory window is active and you want to make use of the calculator, you must first select the last window (it then appears immediately as the front window), after which you can work with the calculator.

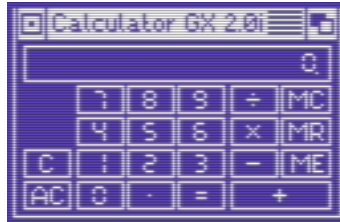
GADGETS

To communicate with the window, you make use of gadgets.

These are graphic images that represent commands. With the help of such a gadget you can, for example, move a window or close the window. The most common gadgets are:

Close gadget	To close a window
Toback gadget	To put windows at the back
String gadget	To enter texts
Toggle gadget	To select options.

You can find many of these gadgets in the drawing of a window below.



Windows can contain one or more of these gadgets. Moreover, windows can contain other gadgets that are needed for the special task of this window. For example, the calculator contains gadgets that represent the keys to be pressed.

SELECTING GADGETS

You can select a gadget by moving the pointer onto the gadget and then clicking. You will then see the gadget displayed in inverse video for a moment. Toggle-gadgets remain in inverse video. If you accidentally select a wrong gadget, you must remove the pointer from the gadget while holding the fire button down, after which you can release the fire button again.

MOVING WINDOWS

This is how you can move a window: stand somewhere in the drag bar of the window. If you now press the fire button, you will see the corner points appear. These corner points represent the corners of your window. If you now move the pointer, you will see those corners move along. By then moving to the place where you want to put the window, and releasing the fire button, you have moved the window.



MOVING WINDOWS IN FRONT OF AND BEHIND OTHER WINDOWS

When windows overlap each other, one window appears in front of the other.

To put a window in front of another window, select the window; this window then appears at the front of the screen and is also active.

To put a window behind another window, select the toback gadget of the window that you want to put at the back; this window then appears at the back of the screen and the window that is now at the front has also become active.



CLOSING WINDOWS

To close a window, select the close gadget. You can find this gadget in almost every window in the top left corner.

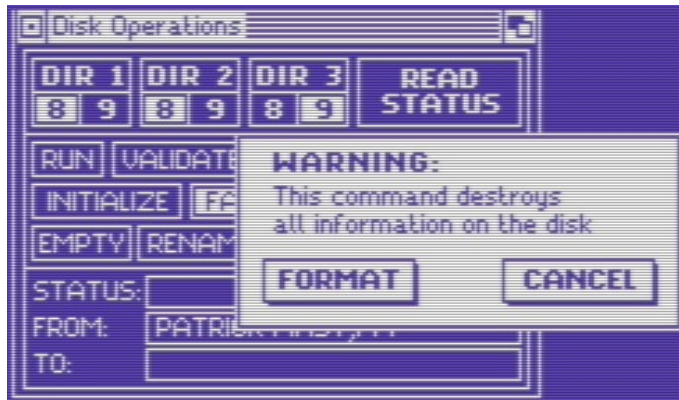


COMMUNICATING WITH A WINDOW

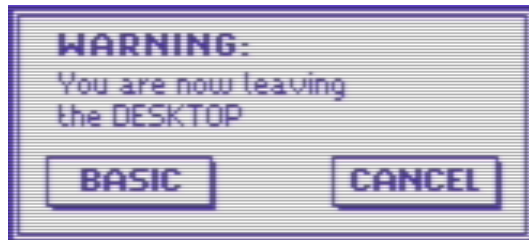
If a program needs a name from you, for example to ask for the name and id of a diskette to be formatted, you must make use of a string gadget. When you select such a string gadget, a cursor appears, after which you can type in the name you wish. If you click outside the gadget or press **RETURN**, the cursor disappears and the gadget is no longer selected. To select the gadget again, point with the pointer somewhere inside the gadget and click.

REQUESTERS

Sometimes it is compulsory to steer a program or to confirm a certain action. This is done by means of a requester. If you want to format a disk, for example, a requester appears that offers you the possibility to continue or abort the command. You can see this requester depicted here:



Only after you have reacted to the requester does the computer CONTINUE. You can answer a requester by making use of the gadgets it has. Those gadgets usually consist of a gadget with which you continue the task (the Continue gadget and similar) and a gadget with which you abort the task (the CANCEL gadget and similar). When you have reacted to a requester, it disappears and the computer continues with its task.



DESKTOP

INTRODUCTION

The Desktop is the most important element of the Final Cartridge III; it is the pivot around which everything revolves. From the Desktop you can go to BASIC, to the freezer, etc.

OPENING AND CLOSING THE DESKTOP

You can enter the Desktop in 5 different ways:

1. You start up the Desktop by simply switching on the computer with the Final Cartridge III inserted (so always).
2. From BASIC you select the command DESKTOP in the System menu.
3. In BASIC you type in the command DESKTOP.
4. You select, from the freezer, Desktop in the Exit menu.
5. You press the reset button while holding the Commodore key down.

To start afresh from the Desktop, press the **CONTROL** & **SHIFT** & **SHIFT** keys simultaneously, after which the Desktop resets and restarts.

You leave the Desktop by going to BASIC or to the freezer.

THE USE OF THE DESKTOP

The commands in the Desktop are chosen from pull-down menus. If you are not familiar with pull-down menus, we recommend that you read the previous chapter WINDOWS & MENUS very thoroughly.

At the top of the Desktop you will find this menu bar:



We discuss the Desktop commands in the order in which they can be found in the menus.

INFO

In the Info menu there are a few commands with which you can request information about the Final Cartridge III.

DESKTOP

With the Desktop command a requester is opened in which the names of the designers of the Final Cartridge III can be found.

VERSION

With the Version command a requester is opened in which the version numbers of the different parts of the Final Cartridge III can be found.

SYSTEM

In the System menu there are a few system commands.

BASIC

With the "BASIC" command you can go from the Desktop to BASIC.

After you have reacted to the requester that is then opened, you end up in BASIC. Since the Final Cartridge III extends BASIC so much, all the possibilities of the renewed BASIC are discussed in a separate chapter called Basic.

FINAL KILL

With the "Final Kill" command you can switch off the Final Cartridge III. You can see this on the LED of the Final Cartridge III.

FREEZER

With the "FREEZER" command you can go from the Desktop to the freezer. From there you can, for example, print out various windows. From the freezer you can return via Exit Run or Exit Desktop. Since the freezer of the Final Cartridge III is so comprehensive, all the possibilities of the freezer are discussed in a separate chapter called Freezer.

REDRAW

With the Redraw command the screen is redrawn. This is, for example, very useful to check where all the windows are.

PROJECT

In the Project menu there are a few tasks that can be started up from the Desktop.

NOTEPAD

With the NOTEPAD command you enter the Notepad; a very comprehensive description of the Notepad can be found in the chapter TOOLS.

DLINK

With the DLINK COMMAND you can start up future extensions of the Final Cartridge III from diskette.

TLINK

With the TLINK command you can start up future extensions of the Final Cartridge III from cassette.

UTILITIES

In the Utilities menu there are various commands to open utility windows. The description of these Utilities can be found in the chapter TOOLS.

CLOCK

In the Clock menu there are a few commands that relate to the clock built into the Final Cartridge III.

TIME

With the Time option you can determine whether the system time is displayed in the

menu bar. When Time is selected, the time is displayed in the menu bar. If you select the Time option once more, the time disappears again.

ALARM

With the Alarm option you can switch the alarm on and off. When the alarm is on, it goes off at the time you have set. If you select the Alarm option once more, you switch the alarm off again.

SETTINGS

With the Settings command you open the "Clock Settings" window. This window, which is shown below, consists of two parts:

the left side is for setting the time for the clock, the right side is for setting the time for the alarm.

CHANGING THE TIME

You can change the time of the clock and the alarm in exactly the same way. To do this, first select the digits you wish to change, the first two digits for the hours and the last two digits for the minutes, after which you change the time by selecting the up or down gadget. By then selecting the Use gadget, the set time is taken over by the computer.

CHANGING THE TIME MODE

You can even change the way in which the clock is displayed. You can switch between the 12- or 24-hour mode by selecting the "Time Mode" gadget.



TOOLS

This chapter discusses the tools. Tools are implements that the Final Cartridge III offers you.

The tools discussed in this chapter are:

- CALCULATOR
- PREFERENCES
- DISK OPERATIONS
- TAPE OPERATIONS
- BASIC PREFERENCES
- NOTEPAD

CALCULATOR

INTRODUCTION

The Calculator is a calculating machine that, apart from adding, subtracting, dividing and multiplying, also has a memory. Its operation is the same as a normal calculator, and we therefore do not think it is necessary to elaborate on all the instructions.

OPENING AND CLOSING THE CALCULATOR

You can open the Calculator by selecting Calculator in the Utilities menu.

You close the Calculator by selecting the close gadget in the top left corner.

THE USE OF THE CALCULATOR

In the Calculator window every "key" can be selected with the pointer.

The following keys correspond to the functions:

Key	Gadget	Function
	+	Add
	-	Subtract
	÷	Divide
	×	Multiply
 or 	=	Calculate the result
	ME	Memory Enter
	MC	Memory Clear
	MR	Memory Recall
	C	Clear
 & 		
	AC	All Clear
 or 	.	Decimal Point

THE STANDARD FUNCTIONS

To acquaint you with the standard functions, a number of examples follow here:

Key in:	Screen:
AC	0
4	4
+	4
96	96
=	100
AC	0
999	999
:	999
3	3
=	333
AC	0
1000	1000
+	1000
-	1000
750	750
=	250

THE MEMORY

To acquaint you with the use of the memory, a number of examples follow here:

Key in:	Screen:
AC	0
MC	0
7.25	7.25
+	7.25
6.25	6.25
+	13.5
8.5	8.5
=	22
ME	M 22
/	M 22
4	M 4
=	M 5.5
MR	M 22
/	M 22
3	M 3
=	7.33333334

PREFERENCES

INTRODUCTION

With Preferences (Dutch: voorkeuren) you can change a number of settings of the Final Cartridge III, just think of the colours of the screen, etc.

OPENING AND CLOSING PREFERENCES

You can open Preferences by selecting Preferences in the Utilities menu.

You close Preferences by selecting the OK, Cancel or Reset gadget.

OVERVIEW OF FUNCTIONS

With Preferences you can change the following settings:

Screen colours

Pointer colours

Pointer speed

Pointer acceleration

Joystick ports

Peripherals such as disk drives, recorders etc.

POINTER

You can change the colours of the pointer by selecting, with the pointer, the up or down gadget next to COLOR 1 (for the inner colour of the pointer) or COLOR 2 (for the outer colour of the pointer). You can therefore choose whether you want to see the different colours in ascending or descending order.

SCREEN

In the same way as above, you can change the colour of the screen. COLOR 1 stands for the foreground colour and COLOR 2 stands for the background colour.

DRIVER

You also have the possibility to determine by which joystick port the pointer must be driven. For this you can choose Port 1 or Port 2 by selecting the corresponding gadgets.

You can also choose in the same way whether you want to make use of a joystick or a mouse to control the pointer.

VELOCITY

The three gadgets next to VELOCITY enable you to change the speed of the pointer.

ACCELERATION

The three gadgets next to ACCELERATION enable you to change the acceleration of the pointer.

DEFAULT

If you want to see the standard (DEFAULT) settings, select Default.

VIEW

If you want to see how you have set everything, select VIEW (look). The settings then remain active until you release the fire button again.

OK

If you are satisfied with the settings, select OK, after which the window is closed automatically.

CANCEL

If you are not satisfied with the changes, you can return to the existing settings by selecting CANCEL, after which the window is closed automatically.

DISK OPERATIONS

INTRODUCTION

In the Disk operations window you have the possibility to carry out various commands on your disk, such as changing the name of your diskette or deleting a program.

OPENING AND CLOSING DISK OPERATIONS

You can open Disk operations by selecting Disk in the Utilities menu.

You close Disk operations by selecting the close gadget in the top left corner.

OVERVIEW OF FUNCTIONS

The possibilities that the "Disk operations" window offers you are briefly listed below. Further on, all these commands are discussed with you in detail.

Changing a program name

Running a program

Changing a diskette name

Quickly formatting a diskette

Emptying a diskette

Initialising a diskette

Validating a diskette

Deleting a program from disk

Viewing directories (up to three at a time !)

OPENING A DIRECTORY WINDOW

You can view a directory on the screen by choosing one of the three DIR gadgets. (If you own two disk drives, you can also display the directory of the disk drive with device number 9 by first selecting the 9 gadget.) When you select the DIR gadget, a window appears that temporarily has the name LOADING DIRECTORY, but when the directory has been loaded, the name of the directory appears as the window name (this to tell the various directories apart later). To read a new directory in an already opened directory window, select the read gadget that you can find at the bottom right of every directory window.



BROWSING THROUGH THE DIRECTORY

It can of course happen that the directory is longer than can be shown in the window. To view the rest of the contents of the disk, you can browse through the directory by means of the up or down gadgets.

SELECTING A PROGRAM

You can select a program by moving onto the program you want and clicking. To make the selected program recognisable, it is displayed in inverse video.

SORTING A DIRECTORY

With the Final Cartridge III it is possible to sort the directory of your disk. This is how you do it: first you open a directory window, in which you select the sort gadget. If you now select a program, you can move it with the up or down gadgets. When it is at the desired place, you simply select another program that you want to move, until they all stand correctly. You can even place empty lines in the directory to keep everything well arranged. You do this by first selecting the program above which you want the empty line, then selecting the line gadget and answering the requester. Only when the whole directory is to your liking do you select the sort gadget once more, after which a requester is opened to ask whether you are sure. If so, the directory on your diskette is renewed.

VIEWING THE ERROR CHANNEL

With the help of the READ STATUS toggle gadget you can request the status of your disk drive. When READ STATUS is selected, the error channel is displayed after every disk command. The disadvantage of selecting this gadget is that you have no control over the pointer while the computer is waiting on the error channel.

RUNNING A PROGRAM

First you select the program that you want to RUN. Then you select the run gadget and after that the DO gadget to give the final command. After you have reacted to the requester that is then opened, the program is loaded with the help of the built-in fastloader and run automatically.

VALIDATING A DISKETTE

Select the correct disk drive with the active DIR gadget. Then select the VALIDATE gadget and after that the DO gadget to give the final command.

If no DIR gadget is active, the disk with device number 8 is automatically chosen.

DELETING A PROGRAM

First you select the program that you want to delete. Then select the SCRATCH gadget and after that the DO gadget to give the final command.

INITIALISING A DISKETTE

Select the correct disk drive with the active DIR gadget. Then select the RUN gadget and after that the DO gadget to give the final command.

If no DIR gadget is active, the disk with device number 8 is automatically chosen.

QUICKLY FORMATTING A DISKETTE

Place the diskette that you want to format in your disk drive.

Then select the gadget called FAST FORMAT. Now select the FROM string gadget to enter the name and the id of the diskette. You give the final command by selecting the DO gadget and reacting to the requester that is opened.

EMPTYING A DISKETTE

Place the diskette that you want to EMPTY in your disk drive. Then select the gadget called Empty. Now select the FROM string gadget to enter the name of the diskette. You give the final command by selecting the DO gadget and reacting to the requester that is opened.

CHANGING A PROGRAM NAME

First you select the program whose name you want to change. Then select the gadget called RENAME, after which the name of the selected program appears in the FROM string gadget.

The FROM gadget shows the name as the program is now called. In the TO gadget you can, by selecting it, adapt or renew the name of the program. You give the final command to change the name by selecting the DO gadget.

CHANGING A DISKETTE NAME

First you select the program whose name you want to change. Then select the gadget called RENAME, after which the name of the diskette appears in the FROM string gadget.

The FROM gadget shows the name as the disk is now called. In the TO gadget you can, by selecting it, adapt or renew the name of the diskette. You give the final command to change the name by selecting the DO gadget.

SEVERAL DIRECTORY WINDOWS AT THE SAME TIME

The possibility to open several directory windows was created for the following applications: how often does it not happen that you quickly want to check two or three disks to see whether they contain the same programs? This can now be realised in the following way. You take the first disk and put it in your disk drive. You select DIR 1, remove the disk from the disk drive and put your second one in. You now select DIR 2. You now see two directories simultaneously on the screen and can therefore compare them.

This process can also be repeated for a third diskette.

NOTE

If you work with different directories, the commands can only be applied to the directory that is indicated by the active DIR gadget.

To read a new directory into an already opened window, select the DIR gadget that you can find at the bottom of every directory window.

TAPE

INTRODUCTION

From this window you can load a program from cassette.

OPENING AND CLOSING TAPE

You can open the Tape window by selecting Tape in the Utilities menu.



You close the Tape window by selecting the close gadget in the top left corner.

THE USE OF TAPE

The Tape window offers you two gadgets for loading a program:

SLOW for slowly loading a program

FAST for quickly loading a program

BASIC PREFERENCES

INTRODUCTION

From this window you can change settings that are useful in BASIC, such as the blinking of the cursor, the border colour, etc. These settings are only active in BASIC.

OPENING AND CLOSING BASIC PREFERENCES

You can open the "Basic preferences" window by selecting "Basic preferences" in the Utilities menu.

You close the "Basic preferences" window by selecting the close gadget in the top left corner.

THE USE OF BASIC PREFERENCES

The "Basic preferences" window offers you various gadgets for changing the settings:

KEYBOARD CLICK

By switching this option on, you hear a click with every key press.

KEY REPEAT

By switching this option on, all the keys become repeating.

CURSOR BLINK

By switching this option off, the cursor no longer blinks.

DEFAULT DEVICE

Here you can set which device (peripheral) you use by default.

BORDER COLOR

Here you can set the border colour that you want.

NUMERIC KEYPAD

By switching this option off, you can no longer use the numeric keypad of the Commodore 128.

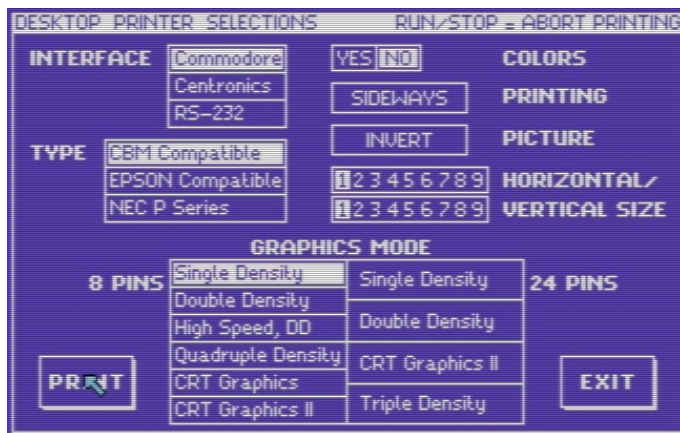
PRINTER

INTRODUCTION

From the printer window you have the possibility to print screens; we call this making screen dumps. Before you make a screen dump, you first have the possibility to set the correct printer, interface, size, etc., after which you select the actual print command.

OPENING AND CLOSING THE PRINTER WINDOW

You can open the printer window from the freezer.



You close the printer window by selecting the EXIT gadget.

OVERVIEW OF FUNCTIONS

From the printer window you can change the following settings:

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With the help of these settings you can adapt the Final Cartridge III to your printer. For a few printers we have already worked out the settings.

INTERFACE

With the help of the gadgets you can make a choice between:

Commodore	The screen dump is sent to a printer through the serial port.
Centronics	The screen dump is sent to a Centronics printer through the user port.
RS-232	The screen dump is sent to an RS-232 printer through the user port. See also the annotations!

TYPE

With the help of the gadgets you can make a choice between:

CBM Compatible	The screen dump is now sent to the printer with COMMODORE control characters.
EPSON Compatible	The screen dump is now sent to the printer with EPSON control characters.
NEC P Series	The screen dump is now sent to the printer with special NEC control characters.

PICTURE

With the help of the invert gadget you can determine whether you want a screen dump printed inverted or normal. If you select the invert gadget, the screen is printed inverted; if it is not selected, it is printed normally.

COLORS

With the help of this gadget you can choose whether you want the screen dump in black and white or in colours on the printer. Naturally this option only makes sense if you work with a colour printer.

PRINTING

With the help of this gadget you can choose whether you want the screen dump printed normally or rotated a quarter turn on the paper. If you select the sideways gadget, the screen is printed rotated a quarter turn on the paper; if it is not selected, it is printed normally.

Sideways printing is very useful if the drawing does not fit on the paper normally.

HORIZONTAL/ VERTICAL SIZE

With the help of these gadgets you can set the horizontal and vertical size of the screen dump. In this way you can choose between a small and a large screen dump.

The numbers represent proportions; by this we mean that by choosing 2 instead of 1, the screen dump becomes twice as large. So note this! In the Single Density graphics mode, a screen dump set with Horizontal 2 and Vertical 2 does not produce the same result as in, for example, Quadruple Density mode.

If the screen dump becomes too large for the paper, you must select SIDEWAYS.

GRAPHICS MODES 8/24 PINS

With the help of these gadgets you can set the graphics mode of the printer. The left column is for 8-pin printers and the right column is for 24-pin printers. Not every printer has all the graphics modes; which different modes your printer has you can check in the manual that belongs to your printer. In that manual you can also find a more extensive description of the various graphics modes.

With the help of those graphics modes you can set the density (Eng: density) of the printer. This density is usually expressed in dots per inch (dpi). The sharper you want the image, the larger you must choose the density, and the longer you must wait.

In short, the modes are:

Single Density	This gives you an image of 60 dpi. 8 or 24
Double Density	This gives you an image of 120 dpi. 8 or 24
Triple Density	This gives you an image of 180 dpi. 24
Quadruple Density	This gives you an image of 240 dpi. 8
8 High Speed, DD	This gives you an image of 120 dpi, but at normal speed (this is because only half is printed). 8
CRT Graphics	This gives you an image of 80 dpi. 8
CRT Graphics II	This gives you an image of 90 dpi. 8 or 24

EXIT

With this, you leave the printer window and always return to the Desktop.

PRINT

With this, you give the command to start printing with the settings you have set. Only when the drawing has been printed can you continue.

!! ABORT PRINTING !!

You can interrupt the printing by pressing the **RUN/STOP** key. The computer then stops sending data to the printer. With printers that have a buffer, the printer can continue while the computer has already stopped.

SPECIAL PRINTER FUNCTIONS

Normally you can control the printer from the printer window, but by POKEing a few values in memory location \$DC0C (hexadecimal) a few special functions can be called up.

You type in these values (of course) before you load the program of which you want to make a screen dump. If you do not want to make use of these special functions, you naturally do not have to POKE anything either. These values that produce special functions are now discussed with you one by one.

POKE \$DC0C,\$FF No Centronics check.

Normally it is always checked whether a Centronics printer is connected to the computer to print on, but by POKEing \$FF in \$DC0C you switch off this check.

POKE \$DC0C,\$FE RS-232 printing.

By poking the value \$FE in \$DC0C, the drawing is sent through the user port to an RS-232 printer.

Before we go through the last functions with you, we must first go into the EPSON control characters for printing drawings somewhat more extensively. There are two kinds of commands for printing drawings. There are the commands in the form <ESC>"*" CHR\$(x) n1 n2 m1 m2 ..., in which the value of x differs for the different graphics modes. But there are also commands in the form <ESC> "X" n1 n2 m1 m2 ..., in which the capital letter X can be one of the following capital letters: K, L, Y, Z to indicate different graphics modes. Now with the Final Cartridge III we make use of the form <ESC> "X" n1 n2 m1 m2 ..., because this form is supported by almost all printers (the majority of printers even support both forms). Unfortunately there are also a few printers that only support the commands of the other form, and therefore we have made it possible, by POKEing one of the values \$30 up to and including \$36 in memory location \$DC0C, to give commands of the other form. You can find the meaning of the value you need and further information about EPSON control characters in the manual that belongs to your printer.

POKE \$DC0C,\$30	Print in Single Density.
POKE \$DC0C,\$31	Print in Double Density.
POKE \$DC0C,\$32	Print in High Speed, Double Density.
POKE \$DC0C,\$33	Print in Quadruple Density.
POKE \$DC0C,\$34	Print in CRT graphics.
POKE \$DC0C,\$35	Print in Plotter graphics.
POKE \$DC0C,\$36	Print in CRT graphics II.

TESTED PRINTERS

The printers listed below have been tested with the Final Cartridge III and work with the following settings.

Printer	Interface	Type
Star NL-10 (CBM)	Commodore	EPSON Compatible
Star NL-10 (IBM)	Centronics	EPSON Compatible
Star NL-10 (Cent)	Centronics	EPSON Compatible
Epson EX-800	Centronics	EPSON Compatible

Brother M 1509	Centronics	EPSON Compatible
Brother M 1709	Centronics	EPSON Compatible
NEC P6	Centronics	NEC P Series
OLIVETTI DM 105	Centronics	EPSON Compatible
PANASONIC X-P1081	Centronics	EPSON Compatible
Commodore MCS 801	Commodore	CBM Compatible (COLORS YES)

PRINTER CABLE

If you want to connect a Centronics or RS-232 printer to your Commodore, you need a special cable for this. You can obtain this cable from your dealer.

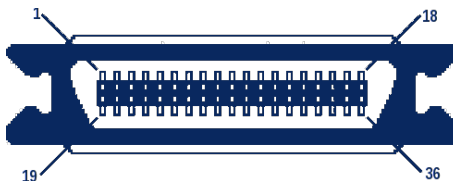
If you want to make the cable yourself, we kindly put at your disposal a diagram of a Centronics cable here! Centronics is here the parallel printer connection that was customary at the time (the wide printer connection), while RS-232 is a serial connection.

Commodore User port pin

A	GND
B	FLAG2
C	PB0
D	PB1
E	PB2
F	PB3
H	PB4
J	PB5
K	PB6
L	PB7
M	PA2
N	GND

Centronics pin

16	GND
10	ACK
2	D0
3	D1
4	D2
5	D3
6	D4
7	D5
8	D6
9	D7
1	STROBE
17	GND



NOTEPAD

INTRODUCTION

Notepad is a small word processor that is built into the Final Cartridge III. The texts that you make in Notepad can be saved (on cassette or diskette) and printed. The word processor uses a proportional character set (which means that an i takes up less space than an m).

OPENING AND CLOSING NOTEPAD

You can open NOTEPAD from the Desktop by selecting Notepad in the PROJECT menu.

You can close Notepad by selecting QUIT in the PROJECT menu.

THE USE OF THE NOTEPAD COMMANDS

The commands in Notepad are chosen from pull-down menus, just like in the Desktop. At the top of Notepad you will therefore also find a menu bar.

We discuss the commands of Notepad in the order of the menus.

PROJECT

In the Project menu there are commands to save your text, to print it, etc.

NEW

With the NEW command you empty Notepad. The cursor moves to the beginning and waits for the text that you want to type in.

LOAD

With the LOAD command you can LOAD a previously made text from diskette. After you have selected LOAD, a requester is opened in which you must type the name of the text that you want to LOAD, after which you must select the Load gadget. If you have selected the Load command by accident, choose the CANCEL gadget, after which you return to Notepad.

TLOAD

With the TLOAD command you can load a text from tape in the same way as described above. After you have typed in the name of the text, you must still press PLAY.

SAVE

With the SAVE command you can SAVE your text on diskette. After you have selected SAVE, a requester is opened in which you must enter the name of the text that you want to keep, after which you must select the Save gadget. If you have selected the Save command by accident, choose the CANCEL gadget, after which you return to Notepad.

TSAVE

With the TSAVE command you can save a text on tape in the same way as described above. After you have typed in the name of the text, you must still press PLAY & RECORD.

PRINT

With the PRINT command you can print your text on your printer.

RECOVER

Normally you lose your text if you choose QUIT, NEW or LOAD. But by selecting the RECOVER command in the Project menu, you can get the text that was lost back.

QUIT

With the QUIT command you close Notepad and return to the Desktop.

FILE

TOP OF FILE

With the "TOP OF FILE" command you can go to the beginning of your text in one go with the cursor. This is also possible by pressing the **CLR/HOME** key.

REDRAW

With the REDRAW command the whole screen is redrawn.

FREEZER

With the FREEZER command you activate the freezer; by selecting Exit Run in the freezer, you return to Notepad.

SCREEN

In the Screen menu there are a few commands that can change the display of your text.

WORDWRAP

With this option you can have your text break off at the end of the line in different ways. When Wordwrap is selected, a word that no longer fits completely on the line is automatically placed on the next line. When Wordwrap is not selected, the letters that still fit on the line are placed there and the others on the next line.

BOLD

With this option you can display your text in bold on the screen.

PROPORTIONAL

With this option you can choose whether you want the text proportionally or normally on the screen. If you want to work with columns, it is advisable to switch Proportional off.

LINE

In the Line menu there are various commands to change the distance between the lines.

SPACEX

By selecting the various Space commands you change the line spacing. SPACE0 is the smallest distance, SPACE2 the largest.

CHARACTER

In the Character menu there are various commands to change the distance between the letters.

SPACEX

By selecting the various Space commands you change the letter spacing. SPACE0 is the smallest distance, SPACE4 the largest.

TYPING IN THE TEXT

You can type in the text in the normal way.

EDIT FUNCTIONS

With the cursor control keys you can move the cursor in the usual way:

One letter to the left or one to the right.

One line up or one down. The cursor then also moves to the beginning of the line.

The **INST/DEL** key removes the letter to the left of the cursor.

It is also possible to move the cursor with the pointer. You simply point at the place where you want the cursor and then click there.

SPECIAL FUNCTIONS

It is possible to include a special function in your text.

For the time being only the printer function "Form Feed" is implemented. You can simply put this function in your text by typing the  key (arrow to the left). This character also appears on the screen, but during printing a "Form Feed" is given at the place of this character, so that the printer starts a new page with the text that follows this character.

BASIC

INTRODUCTION

From BASIC mode you can simply program in BASIC. You can regard this mode as the computer without a cartridge.

The Final Cartridge III nevertheless offers you many extras in this mode, such as:

1. Scrolling BASIC programs.
2. A printer interface.
3. Printing a screen on the printer.
4. The tape/disk fastloader.
5. The use of pull-down menus.
6. The use of about 30 extra BASIC COMMANDS.

STARTING AND STOPPING BASIC MODE

You can enter BASIC mode in the following 3 ways:

1. You hold the **RUN/STOP** key down while switching on or resetting the computer.
2. From the DESKTOP you select the item BASIC in the SYSTEM menu.
3. From the FREEZER menu you select the item BASIC.

To stop BASIC mode and switch to another mode of the Final Cartridge III, the following possibilities exist:

1. You select the item DESKTOP in the SYSTEM menu, after which (after having given a confirmation) you enter the DESKTOP.
2. You type in DESKTOP, after which (after having given a confirmation) you enter the DESKTOP.
3. You press the FREEZE button, after which you enter the FREEZE menu.
4. You select the item FINAL KILL, after which the Final Cartridge III is switched off and you enter the standard Commodore 64/128.
5. You type in KILL, after which the Final Cartridge III is switched off and you enter the standard Commodore 64/128.

EXTRA POSSIBILITIES IN BASIC

FUNCTION KEYS

The function keys are preprogrammed with frequently used commands.

f 1	= LIST	Display a BASIC program
f 2	= MONITOR	Call up the machine language monitor
f 3	= RUN	Start a BASIC program
f 4	= OLD	"Rescue" a BASIC program after NEW or RESET
f 5	= DLOAD	Load a program from diskette

f6	= DSAVE	Save a program on diskette
f7	= DOS"\$	Display directory without losing the program
f8	= DOS	Send a diskette command

The meaning of the functions (except LIST and RUN), which you already know as standard BASIC functions, is described extensively in the following chapters.

SCROLLING

Just as in the machine language monitor, you have the possibility in BASIC to scroll through your BASIC programs. For this you use the normal cursor keys. You can try the scrolling yourself by moving the cursor up or down after a small part of your BASIC program has been displayed on the screen.

EDITING FUNCTIONS

The Final Cartridge III offers you a number of extra edit functions that will often come in useful during programming. Improving programs on the screen becomes a great deal easier because of this.

To make scrolling downwards a little easier, we have made it possible to place the cursor in the bottom left corner with a single key press, after which you can scroll further yourself.

You place the cursor in the bottom left corner by pressing the **CONTROL** and **CLR/HOME** keys simultaneously.

By pressing the **CONTROL** and **DEL** keys simultaneously, you delete everything that is on the line after the cursor.

By pressing the Commodore key **C**, the output to the screen is frozen. The computer waits to continue until you release the key. This is useful when viewing listings, since normally with **CONTROL** the speed is only slowed down.

PRINTER INTERFACE

With the help of the Final Cartridge III it is also possible to use non-Commodore printers. The Final Cartridge III has a built-in Centronics interface with which, using a special cable, you can also work with Centronics printers.

You can also use the Centronics interface from BASIC with the help of the extended OPEN command.

LOW-RESOLUTION SCREEN DUMP

It is also possible to make a low-resolution screen dump directly from BASIC. By this, we mean that you can directly print a screen with text on the printer. You make a low-resolution screen dump by pressing the **CONTROL** and **RETURN** keys simultaneously.

TAPE FASTLOADER/FASTSAVER

The Final Cartridge III is equipped with a tape fastloader/fastsaver that makes it possible to

load and save programs 10 times faster with cassette. The fastloader/fastsaver is fully interchangeable with the most common fastloaders, while you can also work with the standard loader/saver.

The TAPE commands are:

LOAD "name"	load with the standard speed
SAVE "name"	save with the standard speed
LOAD "name",7	load with the built-in fastloader (10 times faster)
SAVE "name",7	save with the built-in fastsaver (10 times faster)

DISK FASTLOADER/FASTSAVER

The Final Cartridge III is moreover equipped with a disk fastloader/fastsaver that makes it possible to load programs 15 times faster from diskette and save 7 times faster on diskette. The standard LOAD and SAVE commands automatically make use of the fastloader/fastsaver.

The DISK commands are:

DLOAD

DSAVE both these commands are clearly described with the extra commands.

PULL-DOWN MENUS

From BASIC it is possible to make use of pull-down menus.

With the help of these menus you can select all the extra BASIC commands (for general information about pull-down menus we refer you to the "Windows & Menus" section).

In contrast to the Desktop, in BASIC the menu bar is not always in view. To call up the pull-down menus, you must press the fire button, after which the menu bar appears on the screen.

You can find the meaning of the commands in the discussion of the extra BASIC commands.

Note! FINAL KILL = KILL

EXTRA BASIC COMMANDS

If the Final Cartridge III is in your computer, you have about 30 extra BASIC commands at your disposal. You can use these commands in two ways:

- you can type them in directly
- you can use them from a program

Of each command we give the following:

- the name of the command;
 - the syntax of the command
- The first line shows the complete command.

The second line shows the abbreviated command. The small letters indicate that you type these in just as they are; the capital letters must be typed while holding **SHIFT**.

- [] square brackets indicate that this part of the command is optional. Do not type the brackets.
- < > angle brackets indicate that you must type in information yourself at this place. Do not type the brackets.
- / a slash means that you can choose between different possibilities. Do not type the slash.
- the meaning of the command
- an example of the command
- comments on the command

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APPEND

Syntax:	APPEND ["<file name>"] [,<device>] aP ["<file name>"] [,<device>]
This command	enables you to add ready-made subroutines that you have on cassette or diskette to a program that is in memory.
Example:	APPEND "file name" for tape APPEND "file name",8 for disk
Comments:	The line numbers of the program that is loaded afterwards are not changed. You must therefore renumber with RENUM before you further edit and save the new program that has arisen from the separate modules. Otherwise errors occur if an added program part contains line numbers lower than the highest number of the program lines already present in the BASIC RAM.

ARRAY

Syntax:	ARRAY aR
This command	displays all the arrays and the contents of those arrays that you are using at that moment.
Example:	ARRAY
Screen:	ARRAY a\$(1)="HALLO" a\$(2)="TEST"

AUTO

Syntax:	AUTO [<line number> [,<step size>]] aU [<line number> [,<step size>]]
This command	gives automatic line numbers. As a result, you no longer have to enter the line numbers yourself during programming, which makes typing in programs faster and easier.
Example:	AUTO 10,5 The computer now starts with line 10 and as soon as you press RETURN , the computer gives the next line number: $10 + 5 = 15$. AUTO This is the same as AUTO 100,10 AUTO 200 This is the same as AUTO 200,10
Comments:	To stop the automatic line numbering, press RETURN immediately after the line number. If you have a program that ends at line 1000, you can use

AUTO 1010,10 to add lines to the program. You can also use this command to insert lines.

BAR

Syntax: BAR [OFF]
 bA [oF]

This command enables you to switch the possibility of calling up the pull-down menus on and off.

Example: BAR OFF switches the menus off
 BAR switches the menus on

Comments: For the display of the menu bar, the memory under the KERNAL from \$E000 onwards is used. This option has been built in to keep the Final Cartridge III well compatible with most programs from BASIC. If a program does not work from BASIC, try it once more with the BAR OFF command.

DAPPEND

Syntax: DAPPEND ["<file name>"]
 dA ["<file name>"]

This command is the same as APPEND "file name",8.

Example: DAPPEND "part2" adds "part2" to the memory
 DAPPEND adds the first program on the disk to the memory

Comments: With this command you do not have to use the suffix ",8".

DEL

Syntax: DEL [<first line>]-[<last line>]
 dE [<first line>]-[<last line>]

This command enables you to remove a part of your program quickly and easily.

Example: DEL 100-200 removes the lines from 100 up to and including 200
 DEL 250- removes the lines from 250 onwards
 DEL -100 removes the lines up to and including 100
 DEL - removes the whole program

Comments: DEL is an abbreviation for DELETE (remove).

DESKTOP

Syntax:	DESKTOP deS
This command	enables you to leave BASIC and go to the DESKTOP.
Example:	DESKTOP With this you enter the Desktop
Screen:	DESKTOP ARE YOU SURE (Y/N)?
Comments:	Before you go to the DESKTOP, you must make sure that the BASIC program you were working with is preserved, because switching to the DESKTOP damages the BASIC memory. That is why the text "ARE YOU SURE (Y/N)?" first appears on the screen. You make your choice by typing the letter y or n or by pressing the fire button.

DLOAD

Syntax:	DLOAD ["<file name>"] dL ["<file name>"]
This command	loads a program from disk using the built-in fastloader. As a result, programs are loaded 15 times faster from disk than normal.
Example:	DLOAD "test" loads the program "test" from diskette DLOAD loads the first program from diskette
Comments:	With this command you do not have to use the suffix ",8". DLOAD "name" corresponds to LOAD "name",8,1

DOS

Syntax:	DOS" [<disk command>]/[<device number>] dO" [<disk command>]/[<device number>]
This command	enables you to easily request the status of the disk drive. You can also give disk commands with this command, or switch to a second disk drive.
Example:	DOS" reads out the ERROR channel DOS"\$ displays the contents of the diskette DOS "N0: name, id" formats a disk DOS"V validates a disk DOS"9 all disk commands now apply to the disk with number 9
Comments:	DOS"test corresponds to the following series of commands:

OPEN 15,8,15 
PRINT#15,"test" 

The disk commands are described in the manual of your disk drive.

DOS"\$

Syntax: DOS"\$
 dO"\$

This command displays the directory on the screen without removing the program that is in memory.

Example: DOS"\$ this displays the directory of the disk

Comments: By using the function key with this command, the screen is first cleared, after which the directory is displayed.

DSAVE

Syntax: DSAVE "<file name>"
 dS "<file name>"

This command writes a program to disk using the built-in fastsaver. As a result, programs are written to disk 7 times faster than normal.

Example: DSAVE "test" writes the program "test" to diskette

Comments: With this command you do not have to use the suffix ",8".

DUMP

Syntax: DUMP
 dU

This command displays all the variables and also the values of those variables that are in use at that moment.

Example: DUMP

Comments: To view arrays, you must make use of the ARRAY command.

DVERIFY

Syntax: DVERIFY ["<file name>"]
 dV ["<file name>"]

This command checks whether a program on the diskette with the name "file name" is identical to the program in the memory of the computer. If the two programs are the same, the computer comes up with the normal "OK" and "READY" messages, but if they differ a "VERIFY ERROR" is given.

Example: DVERIFY "test" checks the program test on disk
DVERIFY checks the first program on disk

Comments: DVERIFY is the same as VERIFY "file name", 8 But with this command you do not have to use the suffix ",8".

FIND

Syntax: FIND ["<text>"/<BASIC command>/<variable>]
fl ["<text>"/<BASIC command>/<variable>]

This command searches the whole program for a text, variable, number or command.

Example: FIND "test" displays the lines in which the word test occurs.
FIND POKE 53280 displays the lines in which this POKE command occurs.
FIND Z displays the lines in which the variables Z, Z%, Z\$ occur, whether indexed or not
FIND Z\$ displays the lines in which the variable Z\$ occurs, whether indexed or not
FIND Z% displays the lines in which the variable Z% occurs, whether indexed or not
FIND 9 displays the lines in which a 9 occurs, such as:
POKE 19,0;POKE 12,191;z=0.192 etc.
FIND displays all lines

HELP

Syntax: HELP
hE

This command: displays the line where a BASIC program was interrupted by an error.

If a BASIC program produces an error that causes an error message from the system, the erroneous BASIC statement is not displayed on the screen in standard CBM-BASIC. HELP provides the output of the whole BASIC line that causes the error.

KILL

Syntax: KILL
kl

This command switches off all the functions of the Final Cartridge III. The freezer still works, but it will return to the standard Commodore 64/128 unless you leave the freezer via the monitor.

The LED on the cartridge indicates the status:

LED on = cartridge activated

LED off = cartridge switched off

LIST

Syntax: LIST [[<first line>]-[last line]]
ll [[<first line>]-[last line]]

This command "lists" your BASIC program on the screen, but is improved in such a way that it removes the "LIST" protections present in BASIC programs.

MEM

Syntax: MEM
mE

This command displays the distribution of the BASIC memory.

BASIC	gives the total number of free bytes in BASIC.	
PROGRAM	gives the number of bytes used by the program.	
VARIABLES	gives the number of bytes used by variables.	
STRINGS	gives the number of bytes used by strings.	
FREE	gives the number of free bytes that are left.	

Example: MEM

Screen:

MEM		
BASIC	38911	BYTES
PROGRAM	2	BYTES
VARIABLES	0	BYTES
ARRAYS	0	BYTES
STRINGS	0	BYTES
FREE	38909	BYTES

MON

Syntax:	MON mO
This command	activates the machine language monitor present in the Final Cartridge III. An extensive description of this excellent monitor is given further on in this manual.

MREAD

Syntax:	MREAD <memory location> mR <memory location>
This command	reads a memory block of 192 bytes from a start position that you specify. You can then put this block in the 24K of extra memory space with the MWRITE command.
Example:	<pre>FOR I = 0 TO 4 MREAD \$0400 + I * 192 MWRITE \$A000 + I * 192 NEXT I</pre> In this way you can put a screen with text in the extra memory.
Comments:	With this command it is in principle possible to read from every address of the 64K, but ultimately it is intended to reach those addresses in the "shadow" RAM that cannot be addressed with the PEEK and POKE commands. The 24K in question are located at the addresses: \$A000-\$BFFF = 8K BASIC interpreter \$C000-\$CFFF = 4K free RAM \$D000-\$DFFF = 4K VIC, SID and I/O \$E000-\$FFFF = 8K Kernal Note that MREAD and MWRITE make use of the cassette recorder buffer, which is 192 bytes long; hence a block cannot be larger than 192 bytes. Just like all the other commands, MREAD and MWRITE are fully integrated in BASIC and can therefore be used with variables in both hexadecimal and decimal.

MWRITE

Syntax:	MWRITE <memory location> mW <memory location>
This command	writes a memory block of 192 bytes, read by MREAD, to a location that you specify.

Example: FOR I = 0 TO 4
 MREAD \$A000 + I * 192
 MWRITE \$0400 + I * 192
 NEXT I

In this way you can take the screen out of the extra memory.

Comments: See MREAD.

OFF

Syntax: OFF
 oF

This command makes it possible to switch off the extra BASIC commands without switching off the Final Cartridge III itself. The fastloader and the printer interface therefore simply remain on.

Comments: You should in any case use this command with TOOLKIT programs and programs that define their own character set.

OLD

Syntax: OLD
 oL

This command ensures that a BASIC program that has been accidentally "removed" from memory by NEW or by a reset becomes usable again.

Comments: You can use this command until you type in or load a new program.

If you have written a program that "hangs", you only need to reset and use OLD, after which you can start the program again.

OPEN

Syntax: OPEN <file number>,[<device number>] [,<address>]
 oP <file number>,[<device number>] [,<address>]

This command opens a channel for input and output and has been extended by the Final Cartridge III for Centronics printers.

Example: OPEN 1,4,2 Normal print mode; you can now use all the ASCII characters of the printer, except the "control-characters"
 OPEN 1,4,3 Transparent mode; the printer now works as described in the manual of the printer. All ASCII and control codes work according to the printer manual.
 OPEN 1,4,9 The complete Commodore character set is now printed.

OPEN 1,4,10 The complete Commodore character set is now printed reversed.

Comments: So to print a listing, including all the graphic characters, on any Centronics parallel printer, you use:

OPEN 1,4,9: CMD 1: LIST

Or the new PLIST command.

ORDER

Syntax: ORDER
oR

This command orders the whole BASIC program that is in memory. It can happen that after a (D)APPEND statement the line numbering is no longer correct. By using the ORDER command, all the lines are inserted at the correct place.

Comments: This command is intended for use in conjunction with the commands APPEND, DAPPEND and RENUM.

PACK

Syntax: PACK
pA

This command "packs" ("crunches") the program present in memory. This saves (a lot of) memory. After you have packed the program, you can simply write it to cassette or diskette. The packed program can be run normally.

Comments: A program that you want to pack must begin at 0801 (hexadecimal). Moreover, many programs are nowadays already "packed", so that a program only becomes larger when "packed" again. See also UNPACK.

PDIR

Syntax: PDIR
pD

This command prints the contents of the diskette on paper.

Example: PDIR prints out the directory

Comments: This command produces the same result as the following series of commands:

LOAD "\$",8

PLIST

```
OPEN 1,4: CMD 1: LIST
PRINT#1
CLOSE 1
```

RENUM

Comments: This command takes GOTOs and GOSUBs into account and is useful to use when the line numbers directly follow each other and you want to put something in between.

REPLACE

This replaces the PRINT#1 statements by normal PRINT statements throughout the whole program.
REPLACE "FC3","Final Cartridge III"
This replaces FC3 by Final Cartridge III throughout the whole program.

TRACE

Syntax: TRACE [OFF]
tR [oF]

This command makes it possible to execute a BASIC program step by step. After you then "run" your program, it prints the line that is being executed at that moment at the top of the screen. TRACE OFF switches back to the normal mode.

Example: TRACE if you now run your program, every line to be executed is displayed

UNPACK

Syntax: UNPACK
uN

This command turns a program packed by the Final Cartridge III back into a normal program, after which it can simply be listed again.

Comments: See also PACK.

\$

Syntax: \$<number in hexadecimal>

This command makes it possible to use numbers in the hexadecimal system.

Example: A=\$0F The variable A gets the value 15
POKE \$D020,A The border becomes grey
SYS \$FCE2 This resets the computer

FREEZER

INTRODUCTION

The left button on the back of the Final Cartridge III is the freeze button. By pressing this button you can freeze all your programs.

After you have pressed the freeze button, you can use the Final Cartridge III to carry out a number of interesting commands, such as making a backup. See also the chapter ANNOTATIONS!

STARTING AND STOPPING THE FREEZER

You can start up the freezer in the following 4 ways:

1. You choose the item FREEZER in the System menu from the Desktop.
2. From BASIC you choose the item FREEZER in the System menu.
3. You press the freeze button while you are in BASIC.
4. You press the freeze button while the Final Cartridge III is switched off.

You can leave the freezer in the following 2 ways:

1. You choose one of the Exit commands
2. You choose one of the Reset commands

THE USE OF THE FREEZER

After you have started up the freezer, the menu bar appears. Unlike all other pull-down menus, we do not use a pointer when choosing in these menus.

You can browse through these pull-down menus in two ways:

1. By using a joystick, you browse left and right through the different menus. By going forwards or backwards, you browse through one particular menu. You select the command you want by pressing the fire button.
2. By using the cursor. With cursor right and cursor left (this only with the right shift key!!) you browse through the different menus. With cursor down and cursor up (this only with the right shift key!!), you browse through one particular menu. You select the command you want by pressing .

FREEZER COMMANDS

We discuss the commands in the order of the menus. You can come across all the following commands in the freezer.

BACKUP DISK.....	48
BACKUP TAPE.....	48
BACKUP FDISK.....	48
BACKUP FTAPE.....	48
GAME SPRITE I.....	49
GAME SPRITE II.....	49
GAME JOYSWAP.....	49
GAME AUTOFIRE.....	49

COLORS BACKGND.....	49
COLORS FOREGND.....	49
COLORS BORDER.....	49
PRINT SETTINGS.....	50
PRINT VIEW.....	50
PRINT VIEW BORDER.....	50
PRINT VIEW FOREGROUND.....	50
PRINT VIEW BCOLOR0.....	50
PRINT VIEW BCOLOR1.....	50
PRINT VIEW BCOLOR2.....	50
PRINT VIEW BCOLOR3.....	50
PRINT VIEW EXIT.....	50
PRINT SET.....	50
RESET KILL.....	51
RESET ZERO FILL.....	51
RESET CBM64.....	51
EXIT RUN.....	51
EXIT MONITOR.....	51
EXIT DESKTOP.....	51

BACK UP

The Final Cartridge III has the ability to make backups (safety copies) of all your disk and tape programs. Note that this ability is intended for personal use and has not been designed to make illegal copies.

The backups you make can be loaded by anyone, even if they do not have a Final Cartridge III. But note that if you make a backup that you want to load again later without the Final Cartridge III, you should not do so after having switched on one of the following facilities (because these special facilities require a Final Cartridge III): the sprite killer, the joystick port changer or the autofire.

We recommend that before you want to make a backup, you first use the ZERO FILL command from the freezer, then load your program, and only then make a backup. This usually saves you a great deal of memory space.

BACKUP DISK

This command makes a backup on your diskette at normal speed.

BACKUP TAPE

This command makes a backup on your cassette at normal speed.

BACKUP FDISK

This command makes a backup on your diskette using the fastsaver.

BACKUP FTAPE

This command makes a backup on your cassette using the fastsaver.

GAME

This menu contains items that make playing games even easier. It offers you a sprite killer, a joystick port changer and an autofire. After selecting one of the menu options, the program continues after about 20 seconds. The commands remain active until you reset your program and start again.

Unfortunately it may be possible that a program switches off one of the Game options, so that you have to activate such an option again later.

GAME SPRITE I

This command switches off the "sprite to sprite detection", so that the effect of collisions between sprites is no longer noticed by the computer, allowing you to continue your game right to the end. Note that not all games use sprites, so if you still die, the program does not use sprites, or it does not use the sprite-to-sprite detection register.

GAME SPRITE II

This command switches off the "sprite to background detection", so that the effect of collisions of sprites with background objects is no longer noticed by the computer, allowing you to continue your game right to the end.

GAME JOYSWAP

This command swaps the joystick port. By using this command, you do not have to switch joystick ports yourself when the game uses the other port, thereby preventing damage to your computer.

GAME AUTOFIRE

This command gives your normal joystick autofire capability. This is very useful with Invader games. If you now press the fire button, the joystick fires automatically one shot after another.

COLORS

This menu offers you the possibility to change the colours of the screen. You can use this, for example, if you do not like the colours of the program, or if you want to change the colours of the screen before printing, for example to obtain a better grey value. To view the new colours, you can make use of the Print View command.

COLORS BACKGND

This command changes the background colour.

COLORS FOREGND

This command changes the foreground colour.

COLORS BORDER

This command changes the border colour.

PRINT

This menu offers you the possibility to make screen dumps, to view the "frozen" screen and to restore the print vector.

PRINT SETTINGS

This command opens the printer window. You can find its description under Windows & Menus.

PRINT VIEW

This command makes it possible to view the screen to be printed. After you have selected this command, you can pull the screen downwards with the joystick or the cursor keys to examine it; a new menu bar also appears. When you have pulled the screen all the way down, the sprites also appear on the screen.

The new menu bar offers you the possibility to change the set colours from Print View. The commands are:

PRINT VIEW BORDER

This command changes the border colour (it increases the contents of register 53280 (D020 Hex) by one).

PRINT VIEW FOREGROUND

This command changes the foreground colour (it increases the left nibble of the colour memory; in hires it increases the right nibble of the screen memory).

PRINT VIEW BCOLOR0

This command changes background colour 0 (it increases the contents of register 53281 (D021 Hex) by one).

PRINT VIEW BCOLOR1

This command changes background colour 1 (it increases the contents of register 53282 (D022 Hex) by one).

PRINT VIEW BCOLOR2

This command changes background colour 2 (it increases the contents of register 53283 (D023 Hex) by one).

PRINT VIEW BCOLOR3

This command changes background colour 3 (it increases the contents of register 53284 (D024 Hex) by one).

PRINT VIEW EXIT

This command leaves the View; you return to the freezer pull-down menus.

PRINT SET

This command restores the print vector, so that the Centronics interface is activated again. It

may happen that programs overwrite the print vector, after which you can no longer make use of a Centronics printer. After selecting the command, the computer continues the running program.

RESET

This menu offers you the possibility to reset the computer and start it up in a special way.

RESET KILL

This command resets the computer and starts it up in the normal Commodore mode (it switches the Final Cartridge III off).

RESET ZERO FILL

This command resets the computer and, after the memory has been cleaned, starts it up in the normal Commodore mode (it leaves the Final Cartridge III on). By using this command before you load a program to make a backup, you save memory space in the backup.

RESET CBM64

This command resets the computer and starts it up in the normal Commodore mode. (It leaves the Final Cartridge III on)

EXIT

This menu offers you possibilities to go somewhere else from the freezer.

EXIT RUN

This command leaves the freezer, after which the computer continues the program from the point where you froze it.

EXIT MONITOR

This command leaves the freezer and starts the monitor. You can also find a detailed description of the monitor in this manual.

EXIT DESKTOP

This command leaves the freezer and starts up the Desktop.

THE MONITOR

INTRODUCTION

The monitor that is built into the Final Cartridge III is unique in its kind. It has four functions, namely: a machine language monitor, a disk monitor, a character monitor and a sprite monitor.

With the machine language monitor you can communicate directly with the computer in machine language. The great advantage of machine language is that it is many times faster than BASIC.

The machine language monitor provides you with a number of extra commands that greatly simplify programming in machine language. A number of function keys also have a function while you are working with the monitor.

With the drive monitor you can study the disk drive. You can view and change the memory, or write programs that run in the disk drive, etc.

With the character monitor you can view and change characters. In this way you can make your own characters yourself and use them.

With the sprite monitor you can view and change sprites. You can therefore easily design sprites yourself for use in your own programs, or take the sprites out of an existing program and use them.

STARTING AND STOPPING THE MONITOR

You can start the monitor of the Final Cartridge III in 4 different ways, namely:

1. In BASIC mode you type in the command MON.
2. In BASIC mode you press function key F2 (**SHIFT** + **f1**)
3. In BASIC mode you choose MONITOR in the System pull-down menu
4. In FREEZER mode you choose MONITOR

The monitor then announces itself by displaying the registers; the displayed values may differ. (You can find the meaning of the symbols with the R(egister) command)

```
C*
PC  IRQ  BK  AC  XR  YR  SP  NV#BDIZC
.;AB20 EA31 07 85 FF 06 F9 *.***.*
```

To stop the monitor you can always type the Exit command X after the prompt. After this, the computer continues from the moment you switched on the monitor.

GENERAL TERMS AND TECHNIQUES

First of all we want to go through a few general terms with you.

PROMPT

The monitor makes use of a prompt. This means that you see a dot at the beginning of every line (the prompt).

MEMORY REPRESENTATION

.:2000	48 41 4C 4C 4F 20 44 49	HALLO DI	Number representation
.'2000	HALLO	DIT IS EEN TEST V/D FC III	Text representation
.]2000	.*.~*~*~*~*~*~*~*~*~*		Sprite representation
.[2000	*~*~*~*		Character representation
.,2000	48	PHA	Program representation

SCROLLING

If the memory is displayed in one of the representation modes, you have the possibility to scroll. By this, we mean that you can – so to speak – shift the screen to view the memory locations before, or after, the portion currently shown on the screen. You can achieve this by moving the cursor — so to speak — to the top or the bottom of the screen. This will automatically display the preceding, or the following, section on the screen.

The scrolling facility is built into the Final Cartridge III to make viewing large parts of the memory easier.

IMPROVING

An easy facility that is present with many of the display options is improving the contents. For this you only have to type the data you want over the existing data. After pressing the **RETURN** key, the new data are accepted.

The data that you can change in the different display modes are underlined in the following list.

. :2000	48 41 4C 4C 4F 20 44 49 HALLO DI	Number representation
' 2000	HALL0 DIT IS EEN TEST V/D FC III	Text representation
] 2000	*.*.*.*.*.*.*.*.*.*.	Sprite representation
[2000	*.*.*.*.	Character representation
, 2000	48 PHA	Program representation

BANK SWITCHING

Your Commodore contains various ROMs. These can be switched on and off from the monitor. You then switch between the different memory banks and this is called bank switching. The register display shows which banks you have switched on. Which values correspond to which banks is discussed extensively with the O command.

MODES

If you own a disk drive, you can work with two memories, namely the memory of the computer and that of the disk. We have therefore provided two different modes in the monitor; the computer mode (mode 1) and the disk mode (mode 2).

SWITCHING BETWEEN THE MODES

The monitor starts up automatically in mode 1. All the commands that then relate to the memory work with the memory of the computer. You can recognise the computer mode by the fact that the bank you have chosen is displayed in the register display at the bank selection.

To be able to switch from the computer memory to the disk memory, the command OD exists. All the commands that now work with the memory then work with the memory of the disk. You can recognise the disk mode by the fact that DS is displayed in the register display at the bank selection.

To return from disk mode to computer mode, you use the bank command O (if necessary followed by the bank in which you want to work).

KIND OF COMMAND

To indicate whether the commands relate to the memory of the computer or of the disk drive, we speak of two kinds of commands: first the computer commands and second the disk drive commands.

In the list of commands this is indicated by putting a C for computer or a D for disk drive at "Kind of command:". If the commands can relate to both, both are mentioned.

FUNCTION KEYS

When using the monitor, the following function keys are defined as follows:

f 3 scroll upwards

f 5 scroll downwards

f 7 directory

OVERVIEW OF MONITOR COMMANDS

Below you see an overview of all the commands that you have at your disposal after starting up the monitor. Every command is discussed.

A	ASSEMBLE.....	55
C	COMPARE MEMORY.....	56
D	DISASSEMBLE.....	56
EC	EDIT CHARACTER.....	57
ES	EDIT SPRITES.....	57
F	FILL MEMORY.....	58
G	GO.....	58
H	HUNT MEMORY.....	58
I	INTERROGATE.....	59

L	LOAD.....	59
M	MEMORY DISPLAY.....	60
O	BANK.....	60
OD	DISKMONITOR.....	61
P	PRINT MEMORY.....	61
R	REGISTERS DISPLAY.....	61
S	SAVE MEMORY.....	62
T	TRANSFER MEMORY.....	62
X	EXIT.....	63
#	CONVERTING DECIMAL TO HEXADECIMAL.....	63
\$	CONVERTING HEXADECIMAL TO DECIMAL.....	63
@	DISK COMMANDS.....	63
*R	READ BLOCK.....	64
*W	WRITE BLOCK.....	64

A	Assemble	Assembling machine language programs
Syntax:	Axxxx mnemo [operand] xxxx = the start address mnemo = the machine language instruction operand = the operand to which the instruction relates	
This command:	enables you to program in machine language yourself. The monitor is equipped with a built-in direct assembler, so that you can enter, test and save smaller programs directly in assembly language, without having to load an editor and an assembler first. Note that the start address must always be entered as 4 digits (if necessary with a leading zero) and directly after the A. As soon as you have entered an assembler instruction, it is translated immediately and aligned in the line in such a way that, before the instruction, the opcode and the operand are displayed in hexadecimal in the correct order.	
Example:	Enter the following small program and start it with G 1000. With correct input, you get the letter "A" in yellow colour at the top left. Below the G command the register contents are displayed. A1000 LDA #\$01 A1002 STA \$0400 A1005 LDA #\$07 A1007 STA \$D800 A100A BRK	
Screen:	.A1000 A9 01 LDA #\$01 .A1002 8D 00 04 STA \$0400 .A1005 A9 07 LDA #\$07 .A1007 8D 00 D8 STA \$D800 .A100A 00 BRK	
Comments:	If you want to program continuously, you only have to type in this command once. The computer itself calculates the next memory location for the follow-	

ing instruction; the only thing you do is type in the instruction (followed by the operand).

If you want to stop entering the program, press **RETURN** once more after the last program line, after which the monitor accepts all the other commands again.

Kind: C, D.

C	Compare Memory	Comparing blocks of memory
Syntax:	C xxxx yyyy zzzz	
	xxxx	= the start address of the first block
	yyyy	= the end address of the first block
	zzzz	= the start address of the second block
This command	enables you to compare a block of memory with another and keeps you informed of possible differences. The numbers that are displayed on the screen are the memory locations that are not equal. So, if you compare two identical blocks with each other, nothing is displayed on the screen.	
Example:	C 1000 1FFF 4000	With this, you compare the block from 1000 to 1FFF with the memory block 4000 to 4FFF.
Comments:	You do not have to give the end address of the second block; the computer calculates it for you.	
Kind:	C, D.	

D	Disassemble	Disassembling
Syntax:	D xxxx yyyy	
	xxxx	= the start address
	yyyy	= the end address
This command	displays the contents of the memory as machine language. You are now able to disassemble a machine language program. You can change the contents of the memory by simply typing new values.	
Example:	D 3000 300A	
Screen:	<pre>.D 3000 300A .,3000 A9 00 LDA #\$00 .,3002 8D 20 D0 STA \$D020 .,3005 A9 00 LDA #\$00 .,3007 8D 21 D0 STA \$D021 .,300A 00 BRK</pre>	
Comments:	To disassemble a large program, you can make use of the scrolling. For this	

you only have to type in D followed by the start address. This will then disassemble one instruction. To continue, you simply scroll the screen.

Kind: C,D.

EC	Edit character	Changing characters
Syntax:	EC xxxx yyyy xxxx = the start address yyyy = the end address	
This command	enables you to display characters and then change them. After typing in this command, the contents of the memory are displayed in character representation. You now have the possibility to change the character by typing an asterisk "*" in the correct line to make a bit 1, or a dot "." to make a bit 0.	
Example:	EC 2000 2008	This displays the memory from 2000 to 2008 in character representation.
Screen:	<pre>.EC 2000 2008 .[2000 . . **** . .[2001 . * . * . .[2002 . * . * * . .[2003 . * . * * . .[2004 . *[2005 . *[2006 . . * * * . .[2007</pre>	
Kind:	C, D.	

ES	Edit sprites	Changing sprites
Syntax:	ES xxxx xxxx = the start address	
This command	enables you to display sprites and then change them. After typing in this command, the contents of the memory are displayed in sprite representation. You now have the possibility to change the sprite by typing an asterisk "*" in the correct line to make a bit 1, or a dot "." to make a bit 0.	
Example:	ES 2000 2008	This displays the memory from 2000 to 2008 in sprite representation.
Screen:	<pre>.ES 2000 2018 .[2000 * * * * * * * * . * . * . * .[2003 * * * * * * * * . * . * . * .[2006 * * * * . * * . * .[2009 * * * * * * . * * . *</pre>	

```

.[200C ***** ..... ** . ** . **
.[200F **** ..... ** . ** . **
.[2012 **** ..... ** . ** . **
.[2015 **** ..... ** . ** . **
.[2018 **** ..... ** . ** . **

```

Kind: C, D.

F	Fill memory	Filling a part of the memory
Syntax:	F xxxx yyyy zz xxxx = the start address yyyy = the end address zz = the number with which the memory must be filled This command enables you to quickly fill a certain part of the memory with a number.	
Example:	F 3000 4000 00	With this, you fill the memory from 3000 to 4000 with the number 00.
Comments:	This command is easy to clear a part of the memory in which you are going to program, so that you can easily find your program again.	
Kind:	C,D.	

G	Go	Running machine language programs
Syntax:	G XXXX XXXX = the start address This command starts a machine language program at the start address you give. This command is also suitable for testing a machine language program when you have built BRK instructions into the program. The Program Counter points to the address of the next machine language instruction when the breakpoint is reached, so that you can follow and control the course of the program. After testing the program, you can remove the BRK instructions, or replace them with NOPs when the resulting shifts are not desirable.	
Example:	G 3000	With this, you start the program that begins at 3000.
Kind:	C,D.	

H	Hunt memory	Searching for numbers or strings
Syntax:	H xxxx yyyy z1 z2 z3/"<text>" xxxx = the start address	

	yyyy	= the end address
	zn	= the number searched for
	text	= the text searched for
This command	enables you to search the memory for a certain combination of numbers or a text part. If the searched-for combination or text part is found, the memory locations where the searched item is located are displayed on the screen.	
Example:	H 1000 8000 A9 00	With this, you search the part from 1000 to 8000 for A9 00
	H 2000 F000 "FINAL"	With this, you search the part from 2000 to F000 for the text FINAL
Comments:	With this command you can, for example, search for a certain part of a program, because the program is internally stored as numbers. If you search, for example, for the instruction LDA #\$00, you give A9 00 as the numbers.	
Kind:	C, D.	

I	Interrogate	Displaying or entering characters
Syntax:	I xxxx yyyy xxxx = the start address yyyy = the end address	
This command	enables you to display or change texts. After typing in this command, the contents of the memory are displayed in text representation. It is now possible to change the texts by improving them.	
Example:	I 2000 203F	
Screen:	.I 2000 203F . '2000 HALLO DIT IS EEN TEST V/D FC III	
Comments:	By making use of this command, you do not have to look up the values of the texts and type them in; you can now type in the text itself.	

L	Load	Loads a machine language program
Syntax:	L "<file name>",xx[,yyyy] xx = the device number 01 for cassette 08 for diskette yyyy = the start address	
This command	enables you to load a program.	
Example:	L "test",01 Loads the program test from cassette L "test",08 The same for diskette L "test",08,2000 The same for diskette but at a start address	

of your choice

Comments: Giving a start address is intended to "relocate" a program, i.e. put it in another place. This is of course suitable for linking all kinds of small machine language routines together; you also have the possibility with this to view self-starting programs by loading them at another memory location.

Relocating programs is only possible if you work with disk.

Kind: C.

M	Memory display	Looking at the memory
Syntax:	M xxxx yyyy xxxx = the start address yyyy = the end address	
This command	shows you the contents of a memory part, both in hexadecimal and, where possible, a character (a letter, number or graphic symbol). The contents of these locations are displayed on the screen. The first number on the line (a four-digit number) is the memory address. The eight two-digit numbers are the contents of that memory location and the seven following ones. At the end of every line there are 8 characters. The 8 two-digit numbers are the ASCII codes of these characters. You can change the contents of the memory by simply typing new values.	
Example:	M 2000 2010	
Screen:	.M 2000 201F :2000 48 41 4C 4C 4F 20 44 49 HALLO DI :2008 54 20 49 53 20 45 45 4E T IS EEN :2010 20 54 45 53 54 20 56 2F TEST V/ :2018 44 20 45 43 20 49 49 49 D FC III	
Comments:	To view a large memory part, you only have to type in M followed by the start address. This will then display the first 8 memory locations. To continue you can make use of the scrolling. To adjust a certain memory location, you simply type the value you want over it. After you then press <u>RETURN</u> , the memory has been changed.	
Kind:	C,D.	

O	Bank switching	Switching memory banks.
Syntax:	Ox (The letter O followed by a number) x = is a number from 0 to 7	

This command enables you to switch ROMs on and off, so that you can use the full 64K for a machine language program. By choosing different values, you can switch different banks on and off.

You can also use this command to return from the disk monitor to the computer monitor.

You can find the meaning of the values in the table below.

Op	\$0000-\$7FFF	\$8000-\$9FFF	\$A000-\$BFFF	\$C000-\$CFFF	\$D000-\$DFFF	\$E000-\$FFFF
dr	0-32767	32768-40959	40960-49151	49152-53247	53248-57343	57344-65535
00	RAM	RAM	RAM	RAM	RAM	RAM
01	RAM	RAM	RAM	RAM	RAM	RAM
02	RAM	RAM	BASIC	RAM	CHAR-ROM	KERNAL
03	RAM	RAM	BASIC	RAM	CHAR-ROM	KERNAL
04	RAM	RAM	RAM	RAM	RAM	RAM
05	RAM	RAM	RAM	RAM	I/O-REG	RAM
06	RAM	RAM	BASIC	RAM	I/O-REG	KERNAL
07	RAM	RAM	BASIC	RAM	I/O-REG	KERNAL

Explanations:

RAM

CHAR-ROM The character ROM

I/O-REG Input/output register and timer (CIA#1 and CIA#2)

KERNAL The operating system (kernel)

OD Diskmonitor

Syntax: OD

This command switches from the computer monitor to the disk monitor. After this command the memory commands work with the memory of the diskette drive.

Comments: You return to the computer monitor by simply typing in an O.

P Print memory Printing on the printer

Syntax: P

This command sends the output of the next command to the printer. If you now use commands such as D 1000 10A0 or M 1000 10A0, the output appears on the printer. By pressing P once more, the output returns to the screen.

Kind: C.

R Registers display Looking at registers

Syntax: R

Kind: C.

T	Transfer memory	Moving memory parts
Syntax:	T xxxx yyyy zzzz >xxxx = the start address of the block yyyy = the end address of the block zzzz = the start address where it must go	
This command	copies a memory part from one place to another.	
Example:	T 2000 3000 9000 With this, you move the block from 2000 to 3000 to 9000	
Comments:	The computer itself calculates the end address. Make sure that you do not let the parts overlap each other.	
Kind:	C, D.	

X	Exit	Leaving the monitor
Syntax:	X	
This command	enables you to leave the monitor.	

#	Converting decimal to hexadecimal
Syntax:#	# <number> number = the desired number (in the decimal system)
This command	enables you to convert numbers from the decimal system to the hexadecimal system.
Example:	# 53281 With this, you have the number 53281 converted. The answer will be \$D021.

\$	Converting hexadecimal to decimal
Syntax:	\$ xxxx xxxx = the desired number
This command	enables you to convert numbers from the hexadecimal system to the decimal system.
Example:	\$ D021 With this, you have the number D020 converted. The answer will be 53281 (decimal).

@	Disk commands	Disk commands
Syntax:	@[<disk command>]	
This command	enables you to easily request the status of the disk drive. You can also give disk commands with this command, or switch to a second disk drive.	
Example:	@	reads out the ERROR channel
	@\$	displays the directory
	@N: name, id	formats a diskette
Comments:	This command is almost the same as the DOS" command in BASIC.	

*R	Read Block	Reading a block from the disk into the memory of the computer
Syntax:	*R xx yy zz xx = the track number of the block yy = the sector number of the block zz = the place where you want the block in the memory of the computer (zz corresponds to zz00)	
This command	enables you to read a block from the diskette and change it. After the block has been read, it is in the memory of the computer. You now have the possibility to view and change that block in all the ways offered by the Final Cart-ridge III.	
Example:	*R 12 00 CE	This reads the first block of the directory
Comments:	If no memory address is given, the block is always written at address \$CF00	
Kind:	C.	

*W	Write Block	Writing a block
Syntax:	*W xx yy zz xx = the track number of the block yy = the sector number of the block zz = the place of the block in the memory of the computer that you want to put on disk (zz corresponds to zz00)	
This command	enables you to put a block of memory (back) on the diskette.	
Example:	*W 12 00 CE	This writes memory from CE00 to CEFF on the diskette as the first block of the directory
Comments:	If no memory address is given, the block is always assumed to be at address \$CF00.	
Kind:	C.	

ANNOTATIONS

INTRODUCTION

These annotations explain why something may not work as expected.

ANNOTATIONS ABOUT THE FREEZER

With some programs it can take quite a long time before the freezer menu appears.

Never freeze a program during loading.

Although almost all programs can be frozen, it may be possible that you cannot make a backup of some programs, or cannot continue these programs. This is due to new, complicated protections.

Preferably press the FREEZE key at a moment when the program to be protected is in the main menu, unless you want to "freeze" a game, for example, at a certain intermediate state.

In a few cases the FREEZE function can fail. The reasons:

- You try to activate the freezer from the monitor.
- The program has a copy protection that makes use of the sound chip (6581 SID = Sound Interface Device). Because the sound chip has write-only and a few read-only registers, it is not possible to retain and reconstruct the stored values of a certain program state.
- The program reads additional program parts during use. In that case the original diskette must be present when the "frozen" and reactivated program wants to load further program modules.
- The program makes very intensive use of both interrupt timers in the 6526 chips (CIA#1 and CIA#2). For example, with speech output it is under certain circumstances not possible to continue the program, because the high timer speed makes an error-free storage of the program impossible.
- Many commercial programs are protected by means of special loading routines that cannot be bypassed. The Final Cartridge III will use its turbo routines as much as possible, but hand over control to the possibly slower special loading routine when this is technically necessary. Programs saved with the FREEZER, however, are always loaded at turbo speed.
- Commercial programs can only be loaded normally from the original cassette. However, ReSAVE with the FREEZER helps here as well.

BACKUPS

When making backups, we recommend that you first use the Zero Fill command from the freezer before loading your program. In this way you usually save a lot of memory and the backup therefore becomes as small as possible.

If you make a backup with the Final Cartridge III, it consists of two parts. This was done specially to keep the backups interchangeable with the Final Cartridge II.

A backup gets the name FC and -FC. If you want, you can change this name, but both backup parts must get the same name, provided that the name of the large part is preceded by a minus

sign.

Backups that you make of the Final Cartridge III itself do not work!

Backups from tape must be loaded with the built-in fastloader, or with a normal fastloader.

To be sure that the backups also work without the Final Cartridge III, you can best freeze those programs from the standard Commodore mode.

It can sometimes be necessary to reset your disk drive before you can make a backup.

PRINT

Unfortunately we have not entirely succeeded in catching all raster interrupts; as a result it can happen that you cannot print some graphics correctly.

Split screens work with raster interrupts, i.e. a part of the picture is built up when the video scan has passed the relevant "line" of the screen. Our eye does not perceive this; we only see a complete picture. These screens cannot be printed completely.

From the Print menu you always enter the Desktop.

GAME

After activating the autofire, you can only continue the program via autofire if you freeze it once more.

ANNOTATIONS ABOUT THE DESKTOP

Although the Final Cartridge III does not use memory, the Desktop does make use of the memory. This is the reason why you are first warned when you leave BASIC.

ANNOTATIONS ABOUT THE RESET

With the reset button on the back of the Final Cartridge III you can reset all programs.

By holding the Commodore  key down while you reset, you always end up in the Desktop.

By holding the  key down while you reset, you always end up in BASIC.

By only pressing the reset button, you end up in the current mode.

ANNOTATIONS ABOUT BASIC

PACKER

Nowadays numerous programs are already packed. Such a program only becomes larger if you pack it a second time.

ANNOTATIONS ABOUT MICE

Although it is possible to work with a mouse in mouse mode, we recommend that you use a mouse in joystick mode. Some mice block the keyboard. Partly because of this you can only control the freezer from joystick mode.

ANNOTATIONS ABOUT THE DISK FASTLOADER

In order to prevent problems with old disk drives and bad diskettes, we have reduced the fast-loader to 15 times faster. The time difference is minimal and it prevents a lot of annoyance.

Much commercial software is protected by means of special loading routines. It is impossible to "pass" these routines and the Final Cartridge III will not try that either. This means that the Final Cartridge III will try to load in as much as possible with the disk fastloader and leave the rest to the special loading routines.

It has turned out that the first version of the Final Cartridge III did not work entirely well with computers in which SPEEDDOS was built in. This defect has been remedied in later versions.

DESKTOP V1.0

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Hardware:

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CONTINUE

**THE FINAL CARTRIDGE III
INSTRUCTION MANUAL**