



# PHILIPS

## **P2519**

### **CP/M**

### **USER GUIDE**

**IMPORTANT NOTE:**

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## Preface

### PREFACE

The P2000C CP/M User Guide is intended to provide an introduction to the use of the CP/M\* operating system on the Philips P2000C personal computer. It provides, with as little technicality as possible, the information required to install the system and prepare it to run application programs.

The Guide also provides a summary of the facilities and commands provided by the operating system for copying and renaming files, editing text files, checking disk space, and so on.

A basic knowledge of computer terminology and the Philips hardware is necessary to install the operating system, but previous experience of CP/M itself is not assumed.

The 'P2000C Hardware Operator Manual' (P2010/12 - 993 30121) provides a description of the system: its keyboard, disk drives and monitor, and a description of the procedure for connecting and starting up the computer.

Programmers should refer to the companion manual: the 'P2000C CP/M Reference Guide' (P2519 - 993 11921) for information on the internal workings of the operating system.

\* CP/M is a trademark of Digital Research Inc. Pacific Grove, Ca.



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## Introduction

1 INTRODUCTION

If you have not started up the CP/M operating system on the P2000C before, go straight to chapter 2, which will give you full instructions on how to do this, as well as on how to make a copy of the disk on which CP/M is supplied - a very important procedure.

CP/M (Control Program for Microprocessors) was created in 1973, and developed originally for the Intel 8080 microprocessor. Since that time it has become the most widely used operating system for microcomputers, running also on the Z80 processor, as on the P2000C, and with a vast body of applications software behind it. Version 2.2 of CP/M contains additional features designed to take advantage of the greater storage capacity and faster speeds of peripheral devices such as the hard disk and high speed serial printer.

CP/M must be configured to the particular combination of hardware devices that you are using. This is the purpose of the configuration program; described in chapter 3 of this manual.

A further note for first-time users of CP/M:

Once your system has been configured, it is suggested that you read through chapter 4 - The Operating System, first, and then proceed to chapters 5 and 6, in which the CP/M commands are set out in alphabetical order. These chapters are arranged as a reference section for the format of these commands. However, if you begin with the DIR command on page 5.1, following the directions at the foot of the page, (indicated by '=>'), and typing in the examples given, you will be given a tour of the operating system, and quickly gain practical experience of CP/M's commands.



## Introduction

1.1 THE CONTENTS OF THE PRODUCT DISK

The system disk for CP/M on the Philips P2000C contains the files shown on the left below. A brief description of the purpose of each is given on the right-hand side of the page.

```

CBIOS61.COM : Philips System File
CBIOS62.COM : " "
CBIOS63.COM : " "
CPM61.COM : CP/M 61K Configuration
CPM62.COM : " 62K "
CPM63.COM : " 63K "
CONFIG.COM : Philips Utility Program to Set
             Hardware Configuration
CONFIG.MSG : Message File for Configuration
             Program
CONFIG.DAT : Data File for Configuration Program
UTIL.COM : Copy and Format Utility
UTIL.MSG : Message File for above
ED.COM : CP/M Text editor
ASM.COM : CP/M Assembler
PIP.COM : CP/M Peripheral Interchange Program
          (copies files)
STAT.COM : CP/M Statistical Information Program
          (displays size of files)
DDT.COM : CP/M Dynamic Debugging Tool
DUMP.COM : Program to display disk contents in
          hexadecimal form
SUBMIT.COM : Automatic command processing program
XSUB.COM : Utility for the submit program
SYSGEN.COM : Copies the system tracks
LOAD.COM : Loads hex files into memory
BACKUP.COM : Backup program for hard disks
DUMP.ASM : Used with DUMP program
  
```

These utilities and functions are described in detail either in this manual, or in the companion manual; the P2000C CP/M Reference Guide.



## Introduction

### 1.2 KEY REPRESENTATION

Sometimes, in this manual, it will be necessary to describe a sequence of keys that you have to press. This will be represented as follows:

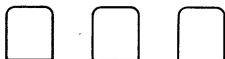
- You should press just one key:



- You should press two (or more) keys simultaneously:



- You should press several keys, one after the other:



- The following key is the 'carriage return', sometimes, within screen displays, abbreviated to <CR> , or (CR).



## Introduction

1.1 THE CONTENTS OF THE PRODUCT DISK

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CBIOS61.COM	:	Philips System File
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CPM61.COM	:	CP/M 61K Configuration
CPM62.COM	:	" 62K "
CPM63.COM	:	" 63K "
CONFIG.COM	:	Philips Utility Program to Set Hardware Configuration
CONFIG.MSG	:	Message File for Configuration Program
CONFIG.DAT	:	Data File for Configuration Program
UTIL.COM	:	Copy and Format Utility
UTIL.MSG	:	Message File for above
ED.COM	:	CP/M Text editor
ASM.COM	:	CP/M Assembler
PIP.COM	:	CP/M Peripheral Interchange Program (copies files)
STAT.COM	:	CP/M Statistical Information Program (displays size of files)
DDT.COM	:	CP/M Dynamic Debugging Tool
DUMP.COM	:	Program to display disk contents in hexadecimal form
SUBMIT.COM	:	Automatic command processing program
XSUB.COM	:	Utility for the submit program
SYSGEN.COM	:	Copies the system tracks
LOAD.COM	:	Loads hex files into memory
BACKUP.COM	:	Backup program for hard disks
DUMP.ASM	:	Used with DUMP program

These utilities and functions are described in detail either in this manual, or in the companion manual; the P2000C CP/M Reference Guide.

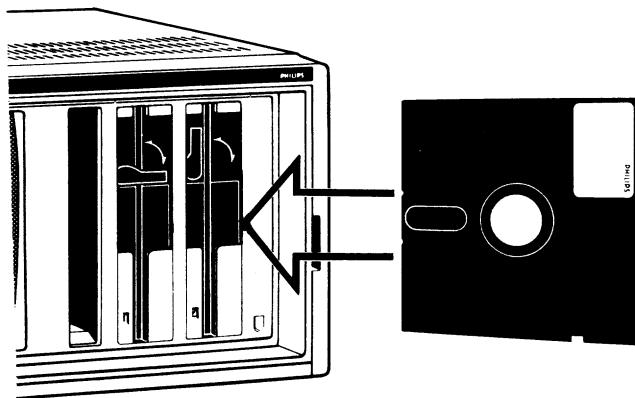




## Starting Up CP/M on the P2000C

2 STARTING UP CP/M ON THE P2000C

- 1 Look at the drawing on this page. It shows you which way round the floppy disks should be when you put them into the disk drives.
- 2 To start up CP/M, slot the system disk carefully into the left-hand drive, (labelled drive '1'), press down the lever, and press the 'reset' button on the front panel of the computer.



- 3 The first screen display will appear after a few moments. It gives information about the keyboard, video, disks and printer.
- 4 The operating system will halt at the standard CP/M prompt `A>`. This means that it is ready for instructions, and you should now follow the steps set out on the following pages to make a copy of your system disk.

## Starting Up CP/M on the P2000C

2.1 HOW TO PROCEED AFTER STARTING CP/M FOR THE FIRST TIME

The first thing that you should do, whatever type of hardware you are using, is to make a backup or security copy of the CP/M disk. After that, how you proceed depends on various factors. We have summarised these below in the form of a checklist, indicating the appropriate action to take in each case.

CHECKLIST

- Do you need to copy the system disk?  
YES : Follow instructions in section 2.2
  
- Do you have a non-English language keyboard?  
YES : Follow instructions in section 2.4 to configure the system to the correct national version.
  
- Do you intend to install CP/M onto a hard disk?  
YES : Run the configuration program and use the 'disk table editing' option to inform the system. The process is described in chapter 3.
  
- Do you want to prepare an 'application disk', that is, one that will automatically load and run an application program (for example, a word processing package) each time, rather than start CP/M first?  
YES : Follow the instructions in section 2.4 to configure the system, ignoring those that refer to the configuration of national versions, if you do not need to do this.
  
- Do you have other diskettes (certified double-sided, double-density) or a hard disk that you need to format for use on the P2000C?  
YES : The instructions in section 2.5 explain how to format disks with the 'UTIL' program.



Starting Up CP/M on the P2000C

2.2 BACKUP FOR FLOPPY DISKS

1 The best way to copy your disks is by using the utility program, 'UTIL', which is provided on the system disk.

2 Place a new (or newly-formatted) diskette in drive 2, leaving the system disk in drive 1. Then start the program by typing in the name against the CP/M prompt, as follows:

A>UTIL

3 The program is very simple to use. It displays a series of prompts, to which you should respond by typing in the numbers or letters shown in black below:

**P2000C UTIL (Rel: 1.0X) - MAIN MENU**

- SELECT:3
- 1 - FORMAT FLOPPY DISK
- 2 - FORMAT HARD DISK
- 3 - COPY FLOPPY DISK
- 4 - REDEFINE LANGUAGE/FLOPPY DISK ARRANGEMENT

TO ESCAPE PRESS 'ESC' OR '0'

Enter SOURCE drive (1 to 4): 1  
Enter DESTINATION drive (1 to 4): 2

Do you wish to verify while copying: Y  
Select source disk type:

4 (Answer at this point with either '1' if your system disk is of 640K capacity, or '2', if your P2000C uses 160K disks. Then, if you are ready, press any key to start copying).

## Starting Up CP/M on the P2000C



Use the 'ESC' key, situated at the top left of the keyboard, to leave the program when the copy process is complete; (or at any other point). Once you have made a copy of the system disk, you should consider the original to be inviolable, and store it in a safe place, in case you need to restore CP/M for any reason. Always work with a copy.

### 2.3 NOTE FOR HARD DISK USERS

If you are using a hard disk, you will need to run the hard disk 'Backup' program, rather than 'Util' to transfer the data from the hard disk to a series of floppy disks. The 'Backup' program is fully described in chapter 8. To install the CP/M system onto the hard disk you need to use the 'disk table editing' option of the configuration program. This is described in chapter 3.

### 2.4 CONFIGURING NATIONAL VERSION KEYBOARD/VIDEO (& PROGRAM AUTOSTART)

If your keyboard is not the same as the version indicated on the screen when the system is first started, (see page 2.1), you must configure the system's internal keyboard table to ensure that your keyboard produces the characters shown on the keys and not the characters belonging to some other language. To do this, it is necessary to run the configuration program. This section gives the instructions required to configure national versions of keyboard and video. It also explains how to create an 'application disk', containing CP/M and an application package to be run on it.

- 1 Start the program, (in the normal way for programs running on CP/M), by typing its name:

```
A>CONFIG
```



## Starting Up CP/M on the P2000C

- 2 Skip over the first prompt for language selection by pressing carriage return. The next screen displayed is the configuration program 'main menu'. Select option 1 (system configuration). The program then displays a screen of information showing all possible hardware configurations. One of the entries in each column is displayed brighter than the others; this indicates the value that is currently set by the system.
- 3 Use the cursor-movement keys to shift to the 'keyboard' column. Then enter the number of the national language version that you require:  

ASCII - ASCII standard	CH/D - Swiss/German
CH/F - Swiss/French	D/A - German/Austrian
E - Spanish	F/B - French/Belgian
I - Italian	S/SF - Swedish/Finnish
UK/NL - English/Dutch	
- 4 The program will shift automatically to the next column to enable you to select the language version for the video. Enter the appropriate number as before. Since we are not interested, at this stage, with the other aspects of hardware configuration, we will now proceed to leave the program. Press the carriage return key.
- 5 After a short interval the program will display the first of a series of prompts at the bottom of the screen. Each of these prompts is explained on the following page, and a suggested response provided that will satisfy the requirements of the program.

Note: In this section of the configuration program you will be able to specify the name of an application program to be automatically loaded and started each time that the disk is 'booted' (started up), and at the same time, to copy the configured CP/M system to the same disk. Preparing an 'application disk' in this way leaves the second disk drive free for a data disk. However, note that if you do so, you will not be able to use CP/M again on that disk without repeating the procedure that follows; that is, without copying CP/M a second time to the disk without the 'autostart' option.

## Starting Up CP/M on the P2000C



Prompt on-screen	Explanation	Operator response
Default at startup : C)apslock, N)ormal	Sets capitals lock or normal lower case mode	N
Enter printer timeout value (1 to 1024 sec) followed by (CR)	Sets number of seconds that the system will wait if a print command is sent while the printer is off-line.	22 (CR)
Enter Autostart string or (CR)	If you wanted to have the system start a program for you, the program name would be entered here.	Program name (in capitals) followed by (CR)
Enter Welcome message or (CR)	Any text entered here will be displayed on the screen each time that the system is started.	Text followed by (CR)
Enter floppy drive number on which to write new system (1,2,3,4)	The modified configuration will be written to the disk in this drive. Enter '2' to create the 'application disk'.	1
Check that the correct disk is in selected drive, then enter (CR)	Opportunity to check that the disk is in order	(CR)
Press RESET to exit program when configuration complete	At this point the 'main menu' will be re-displayed together with this final prompt.	Press 'Reset' (on front panel of the P2000C)



## 2.5 FORMATTING DISKS

The utility program 'UTIL' provides options to format both floppy disks and hard disks.

### 2.5.1 Formatting Diskettes

Philips supplies formatted diskettes for the 160K and 640K versions of the P2000C. With the 'UTIL' program you can give any certified double-sided, double-density diskettes the necessary format for use with this microcomputer.

Start the program by typing in the name:

```
A>UTIL
```

The program's main menu is shown on page 2.3. Select option '1'. Place the diskette or diskettes to be formatted in any drive(s) - you can use drive 1, after removing the system disk. Type the drive numbers in response to the prompt:

```
Drives to format (1 to 4) :
```

Make sure that the remaining disks do not contain useful data. Then type any key to start the process. Formatting continues automatically for the specified disk drive numbers.

To interrupt the program type 'ESC' or '0'.

## Starting Up CP/M on the P2000C

2.5.2 Formatting Hard Disks

Option 2 of the program gives you the possibility to format hard disks.

The hard disk must be configured for 256 byte sectors and must be properly connected. Type '1' in response to the prompt:

Which DRIVE (1 or 2)?

Bear in mind that any data present on the hard disk will be deleted during the formatting process. To continue type 'YES'.

2.6 PRINT SCREEN FACILITY

The implementation of CP/M on the P2000C includes a facility that you can use at any point within the operating system to send the contents of the screen to the printer. Press:







## The Configuration Program

3 THE CONFIGURATION PROGRAM

In this chapter we return to the configuration program and look at its various facilities in more detail. The purpose of the program is simply to collect all the information relating to the type and capacity of disks, the keyboard, the printer and the other hardware devices that the operating system needs to correctly perform input and output routines. The following is a list of the hardware that the program deals with:

- DISKS**                    These can be 160 kilobyte or 640 kilobyte capacity, or you may have a hard disk of up to 10 megabyte capacity. Various combinations are possible.
- KEYBOARD/VIDEO**        The operating system stores information about the characters required by different national languages in a series of 'tables', one for each language supported (French, German/Austrian and so on). With the configuration program you can specify the table that you need and this will be the one loaded each time that CP/M is started.
- PRINTERS**                Printers used with the P2000C are basically of two kinds: matrix and daisywheel. The configurator also stores tables for the different types of printer. With daisywheel printers it may sometimes be necessary to specify a new table if a different printwheel is used, since printwheels may have different characters.

## The Configuration Program



**PRINT SPEED**            Printers can handle output from the computer at different speeds. This is measured in bits (electrical impulses) per second, which is referred to as the 'Baud rate' of the device. The configuration program recognises speeds from 75 to 19200 Baud.

**COMMUNICATIONS SPEED**    The P2000C is equipped with a data communications channel for transmission of binary-coded information to or from other computers. The speed that data is transmitted over such a communications line is also measured in bits per second.

### 3.1 NOTE ON WORKING COPY OF SOFTWARE

Since the configuration program will affect your system software, before beginning to work with it, make sure that you have at least one copy of the system disk, as supplied. Disks may be copied with the 'UTIL' program, as described on page 2.3.

### 3.2 LEAVING THE CONFIGURATION PROGRAM

It is only possible to leave the configuration program by pressing the 'reset' button on the front panel of the P2000C. Any changes made up to this point will not overwrite the current system configuration tables, unless a new system has already been generated (see page 3.5). The original configuration will be restored by the system.



## The Configuration Program

### 3.3 STARTING THE PROGRAM / MAIN MENU

To start the configuration program type the name of the program against the CP/M prompt:

```
A> CONFIG
```

The program will first of all display a screen for 'language selection', which you should ignore by pressing the carriage return key. This will take you to the main menu of the configuration program. The display consists of a numbered list of 6 choices for further action (0 to 5), under an inverted line giving the name of the section in which you are working and the name, version and generation date of the program.

- 0 = Return To Language Selection
- 1 = System Configuration
- 2 = Disk Table Editing
- 3 = Keyboard Table Editing
- 4 = Video Table Editing
- 5 = Printer Table Editing

Select:

Entering the number of the action you require to carry out will take you to that part of the program. We will first describe the option for the general system configuration, in which you specify the hardware devices that are in use on your system. The following sections explain the disk and keyboard table editing options. You will need to edit these tables if you have a hard disk or additional floppy disks to configure, or if you wish to set values for special function keys.

## The Configuration Program

3.4 SYSTEM CONFIGURATION

Select option '1' from the main menu to enter the system configuration part of the program.

If you are not used to using computers the screen display at this point may look like a great deal of information to take in. However, remember that the purpose of configuring the system is very simple: to inform the operating system of the type of hardware that it will be using. The screen therefore shows the various possible hardware devices and national versions that could be present, so that you can make your selection. The information on page 3.1 may also help you.

The current configuration is indicated by the items in each column that are shown in 'inverse video', (dark against a bright background). One column is shown brighter than the others, indicating that this is the active column. You can change the value of the active column by entering the number of another item from the list shown. As you enter a number, the active column will shift to the right, but you can use the cursor movement keys to go right or left, as required.

Some notes and examples of individual options follow:

**D i s k :** There is a pre-set disk table; either P2010 or P2012, depending on the version of the P2000C that you are working with. The P2012 uses 640K disk drives, the P2010 has 160K capacity drives. If you are using a hard disk, you will need to configure it. See section 3.6.1.

**K e y b o a r d / V i d e o :** A list of the national versions available is given on page 2.5.

**P r i n t e r :** If you do not know the type of printer to select, choose 'Empty', and check with your dealer.

**P r i n t S p e e d :** The pre-set value (1200 Baud) is suitable for most printers, and need not be changed unless your printer requires a different rate.

**C o m m . S p e e d :** If you are using the communications channel, you may need to set the speed to suit the other equipment you are using (for example, modems). If in doubt, consult your dealer.

**The Configuration Program****3.5 SYSTEM GENERATION**

When you have set up the system configuration to your satisfaction, press the carriage return key. This will inform the program that you want to write this configuration onto the disk, so that it becomes part of the system. This is known as 'system generation'. After pressing the carriage return key, you will be presented with a series of prompts for additional information. These are listed and explained on page 2.6. Suggested responses are provided, which you can type in if you are unsure.

**3.6 TABLE EDITING**

This section describes the procedure for defining the tables used by the system to store information about the disk configuration and the keyboard. You must use the disk table editing facility if you have more than the two standard floppy disk drives connected, if you have a hard disk or if you have a 'RAM'disk. The keyboard editing facility enables you to assign certain functions to certain keys, which may be necessary or useful for running application programs. There are also tables for the video and printer but, since these are more likely to be used by programmers, they are described in the CP/M Reference Manual.

**3.6.1 Disk Table Editing**

Select option 2 to enter the disk table editing part of the configuration program.

## The Configuration Program



The display for Disk Table Editing gives you 5 choices:

- 0 = Return To Main Menu
- 1 = Copy Table To Temporary Buffer
- 2 = Edit Temporary Buffer
- 3 = Save Temporary Buffer To Disk
- 4 = Delete Table From Disk

Select:

The disk tables that have already been defined will also be displayed on the screen. The options shown above perform the following functions:

OPTION	EXPLANATION
0	Takes you back a step to the program's main menu.
1	Copies one of the pre-defined tables to an area of the computer's memory reserved for the purpose. You can copy an existing table, alter it and then save the modified table under a new name.
2	Gives you access to the table that has been copied to memory or to a blank table if none has been copied.
3	Saves the table on disk, including any alterations, under the name of your choice.
4	Deletes an unwanted table from the disk.

On the following pages is a description of the operation of option numbers 1, 2 and 3, and an example display, showing the additional definition of a hard disk.



## The Configuration Program

### SELECT 1 - COPY TO INTERNAL BUFFER

With this selection it is possible to replace the table in the internal buffer (in memory) with any of the listed tables. The program asks for the name of the table to be moved, accepts the input and then returns to the Disk Table Editing Menu. If you wanted, for example, to add a hard disk to your current configuration, you could copy the P2012 or P2010 table to the buffer by entering the name of the table, as displayed, and pressing carriage return.

### SELECT 2 - EDIT INTERNAL BUFFER

You may also start with this option, rather than with option 1 (above), which means that you will start by defining an empty table.

A list is displayed showing the 16 drives names (A to P), and the device that is allocated to each name. An unused name is marked 'not selected'. Here is an example of the table 'P2012', with the addition of a hard disk (divided into two parts, each with a separate name), and a 'RAM disk' (a circuit board installed in the computer to provide extra memory).

A	floppy drive 1, double track drive, 640 kB
B	floppy drive 2, double track drive, 640 kB
C	hard disk 1, 10 MB drive, 5 MB volume low
D	hard disk 1, 10 MB drive, 5 MB volume high
E	ramdisk 256 KB
F	not selected
G	not selected
H	not selected
I	not selected
J	not selected
K	not selected
L	not selected
M	not selected
N	not selected
O	not selected
P	not selected



## The Configuration Program

The cursor control (up and down) keys allow you to move the cursor to the name you wish to allocate or alter. After entering the letter N(ot selected), F(loppy), H(ard disk) or R(amdisk) the system will request drive number and capacity information as required. Experimenting with different entries will quickly show you how the table works. Nothing that you enter will be saved on disk unless you intentionally do so with the 'save' option, described below. Pressing (ESC) will return you to the Disk Table Editing Menu.

Note: If you want to start CP/M from a hard disk in future, you must specify the first volume of the hard disk as 'A'. The prompts displayed during the 'system generation' part of the configuration program will then be slightly different, since you will be writing the newly configured system to the hard disk, rather than to a floppy disk.

### SELECT 3 - SAVE TEMPORARY BUFFER TO DISK

With this selection the current table in the temporary buffer is saved on disk. You will be asked for the name (up to 8 characters) and, if the name already exists, whether the old table should be over-written. After writing the table to disk, the program returns to the Disk Table Editing Menu.

Warning: The operating system must be on a disk in drive A or B or on the hard disk, and this must be a 'bootable' disk; that is, one that can actually be used to start CP/M on your P2000C. There would be a problem, for instance, if you have 640K disk drives but had specified a 160K disk for drive A.





## The Configuration Program

3.6.2 Keyboard Table Editing

Keyboard table editing requires a certain knowledge of the way that the characters represented on the keyboard are handled by the computer. Each time a key in a particular position is pressed, a certain 'code' is generated which the computer recognises. If you know the codes that the machine expects, there is no reason why you should not assign the codes to the keys in the way that is most convenient to you. Application programs are often set up in this way, using certain keys to perform particular functions. In this implementation of CP/M for the P2000C, the combination of keys shown on page 2.8 has been set up to perform the function of printing the contents of the screen. If you are confident of what you are doing, you can use the keyboard table editing option to modify an existing table or create a new one.

Select option 3 to enter the keyboard editing part of the configuration program.

The display for Keyboard Table Editing gives you 5 choices:

- 0 = Return To Main Menu
- 1 = Copy Table To Temporary Buffer
- 2 = Edit Temporary Buffer
- 3 = Save Temporary Buffer To Disk
- 4 = Delete Table From Disk

Select:

There is also a list of the existing tables.

The principal for editing the keyboard table is very similar to that for the disk table, although the screen displays are quite different.



## The Configuration Program

## SELECT 2 - EDIT TEMPORARY BUFFER

If you select option '2', the program will display a diagram of the P2000C keyboard, with the codes generated by the keys represented by zeros. If you had begun by copying a particular national version keyboard table to the buffer, the display would show the codes generated for the keys under that national language version. (Exit from this part of the program by pressing 'ESC').

The codes may be produced under four conditions: unshifted, shifted, 'supershifted' and 'shifted plus supershifted'. Each of these can be produced on the screen by using the 'TAB' key to move from one set of codes to another. The codes themselves are entered in hexadecimal form. (Information on hexadecimal representation is available in many books on microcomputer subjects).

For example, if you wanted to set the key:



(in normal, unshifted mode), to produce the same code as the 'ESC' (escape) key, you would first use the cursor movement keys to reach the position of that key on the diagram, and then type in '1B', which is the hexadecimal representation of the escape function. Then, having set any other functions in the same way, you would exit to the keyboard table editing menu and, selecting '3', save the modified table under an appropriate name, such as 'FKeys'. Next, return to the configuration program main menu to 'system configuration' and select 'FKeys' as your keyboard table. Leave the program, as described on page 2.6, and press 'reset'. The changes that you had made would then be implemented for that CP/M system disk, and would remain effective until the next time that the system was configured.



The Operating System

4 THE OPERATING SYSTEM

Your interface with CP/M is essentially through a set of commands that you type in at the keyboard. Some commands are, or may be, typed by themselves; for example, the DIR command, which displays the filenames on a disk - while others require a filename, or some other specific reference, to be entered in the command line. The REN command, for instance, used to rename a file, is of this kind.

In this manual, the CP/M commands are set out, in alphabetical order, in two groups in chapters 5 and 6. Chapter 5 describes the 'built-in' commands, that is, those which are a part of the monitor program itself. Chapter 6 describes 'transient' commands; those which exist as files on disk and are read into memory as required. The transient commands include PIP, (Peripheral Interchange Program), used for copying files, and ED, the CP/M text editing program.

These are the commands which are covered in the User's Guide.

Built-in .....	Transient .....	Ch.Section .....
DIR	DUMP	1
ERA	ED	2
REN	PIP	3
SAVE	STAT	4
TYPE	SUBMIT	5
USER	SYSGEN	6
.....	.....	.....

The first page in each section describes that particular command in its basic form, and provides an example of a typical interaction with CP/M through that command. In the examples, all the prompts or messages displayed by the operating system are printed in green. Further options or facilities provided by the command are then described on the second and subsequent pages in that section.



## The Operating System

### 4.1 DISK REFERENCES

CP/M addresses disk drives with the letters of the alphabet. The disk that the system is booted from is labelled 'A', and will be the 'logged' disk when the system is started up. The standard CP/M operating system prompt is an ' ' character, and it is always displayed with the name of the currently logged disk. Therefore, the prompt is usually A , since this is the logged drive by default.

Switching the logged disk is a simple matter of typing in the name of another disk drive, followed by a ':', followed by a carriage return. For example:

```
A> B:
B> A:
A>
```

Many of the CP/M commands allow the use of disk references in the command line itself, to save having to log on another disk to access files on that disk. For example:

```
A> STAT B:
```

This would display information about the remaining space on the disk in drive B, and then re-prompt with A .

```
A> ED B:PATIENTS
```

This command line causes the EDitor program to be loaded into memory and the directory of the disk in drive B to be searched for the file 'PATIENTS'

```
A> TYPE C:PROGRAMS
```

The contents of the text file 'PROGRAMS', if found on the disk in the third drive, would be displayed on the screen.

Note that CP/M commands are always followed by a space.



## The Operating System

4.2 FILE REFERENCES

A file reference, to CP/M, consists of three parts, which appear in the following order:

Drive specification in the range A to P. (See previous page). Required if the file is not on the disk in the currently logged drive. Always followed by a colon.

For example: A:                    B:                    G:

Filename. The primary filename consists of a sequence of alphanumeric characters and may be up to eight positions long.

For example: A:PIP                B:HELPCFILE            G:PROG34

Type specification for the file. The filetype extension can be up to three alphanumeric characters and is always separated from the filename by a full stop.

For example: A:PIP.COM    B:HELPCFILE.TXT    G:PROG34.HEX

## NOTE:

If you wish to specify a series of files to be displayed or copied, you may save time by using one of the 'wildcard' characters in the command line. These are the '\*' and the '?' and are used, for example, as follows:

B:*.COM	means all COM files on disk B
B:SYS??.*	means all files starting with SYS with a five-character name
B:*.*	means all files on the disk

For the most part, the file's primary filename is sufficient to identify it, and this is all that is required by most CP/M commands. In some cases, however, the extension must also be specified. This is indicated in the text accompanying the key representation for that command in the next two chapters.

## The Operating System

4.3 CONTROL KEYS

Pressing the 'CTRL' key, in combination with one of a number of other keys, provides a set of line editing and output control functions, as follows:

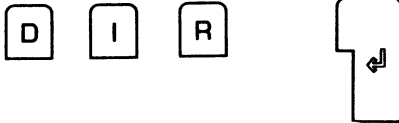
CTRL	C	Re-boot CP/M (warm start)
' '	E	Continue on next line - physical end of line; carriage is returned, but the line is not sent until the carriage return key is pressed.
' '	H	Backspace one character position
' '	J	Line feed: terminate current input
' '	M	Carriage return: terminate input
' '	P	Copy all subsequent console output to the currently assigned list device. Output is sent until the next CTRL-P is typed.
' '	S	Temporarily stop and restart for console output.
' '	U	Delete the entire current line typed at the console.
' '	X	Backspace to beginning of current line.
' '	Z	End input from console. Used in PIP and ED.



5 CP/M BUILT-IN COMMANDS

1 DIR

This command lists filenames from the directory. The filenames may have been given different extensions according to their filetype. The command line may cause all the filenames to be displayed, or all the files with a particular extension, or all files of the same primary filename.



This is the command as you would type it in its basic form.

For the following example, it is assumed that the Philips CP/M system disk is in drive A and that there is a blank disk in drive B.

```
A> DIR
A: CBIOS61  COM : CBIOS62  COM : CBIOS63  COM : CPM61  COM
A: CPM62    COM : CPM63    COM : CONFIG  COM : CONFIG  MSG
A: CONFIG  DAT : UTIL    COM : UTIL    MSG : UTIL    DAT
A: PIP      COM : STAT    COM : DDT     COM : DUMP    COM
A: LOAD    COM : XSUB    COM : SYSGEN  COM : BACKUP  COM
A: ED      COM : ASM     COM : SUBMIT  COM : DUMP    ASM
```

```
A> DIR B:
NO FILE
A> DIR CONFIG.*
A:CONFIG  COM : CONFIG  DAT : CONFIG  MSG
```

A>

==> There are two ways to make a backup copy of your CP/M system - one is by using the 'UTIL' program (see page 2.3) - and the other is to use the SYSGEN utility within CP/M. For a description and example go to page 6.10. ==>

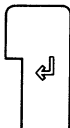
## CP/M Built-in Commands

ERA

The ERA command erases files from the disk. It may be used to delete a single file, or a group of files that share the same name in part, or to delete an entire disk directory.

**E** **R** **A**

filename



To avoid ambiguity and thus accidental erasing of files, the full filename should be specified; ie, with the type extension if there is one.

The example that follows shows an extract from the directory of the disk in drive A, containing a number of unnecessary backup and superseded files. The first ERA command deletes a single file. The second deletes all the files with the extension 'AUG'. The third would delete all the files on the disk in drive B. The last line of the example shows the directory after erasure of these files.

```
A: CONFIG DAT : 559CASES AUG : REFERRED AUG : VAC BAK
A: 559CASES SEP : REFERRED SEP : ACCTS SEP : SURG AUG
```

```
A> ERA VAC.BAK
A> ERA *.AUG
A> ERA B:*.*
```

```
A: CONFIG DAT : 559CASES SEP : REFERRED SEP : ACCTS SEP
```

==> It is possible to string together a number of commands, such as ERA or REN, and have them executed together. This may be useful if you have a number of operations that need to be performed regularly. The SUBMIT command is described and an example given on page 6.9. ==>





## CP/M Built-in Commands

3 REN

The REN command is used to change the name of a file on the directory. In the command line two filenames must be given, the 'new' name first and the 'old' name after the 'equals' sign.

**R** **E** **N**

newfilename = oldfilename



In the following example, extracts from the contents of the directories for disks A and B are displayed, two filenames are changed, and the same lines from the directory shown again.

A: CONFIG COM : CONFIG DAT : PATIENTS

B: CONFIG COM : CONFIG DAT : CHECKLST

A>REN 559CASES.AUG = PATIENTS

A>REN B:CHECKLST.TXT = CHECKLST

A: CONFIG COM : CONFIG DAT : 559CASES AUG

B: CONFIG COM : CONFIG DAT : CHECKLST TXT

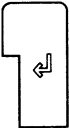
==> Besides renaming, you may also need to remove outdated or unnecessary files from the disk. For this purpose the ERA command can be used. For a description of this built-in command and an example of its use, go to page 5.2. ==>

## CP/M Built-in Commands

4 SAVE

The SAVE command writes the contents of memory to disk starting at location 100H, according to the number of 256 byte 'pages' specified in the command line.

S
A
V
E
 pages filename



The full name of the file, with extension, must be given.

The SAVE command would be used, for instance, when transferring a copy of PIP into each disk user area. The DDT (Dynamic Debugging Tool) utility is used to display the 'NEXT' free address in memory after the end of the program. This is then used to calculate the number of pages to be specified in the SAVE command, as follows. If the last two digits of the NEXT address are 00, subtract 1 from the address, otherwise do not. Then take the first two digits and convert to decimal to give the number of pages.

```

A> DDT PIP.COM
DDT VERS 2.2
NEXT PC
1E00 0100
- G0
A> USER 1
A> SAVE 29 PIP.COM
    
```

==> To view the contents of the directory accessible in a particular user area, the DIR command is used. For a description and example go to page 5.1. ==>

5 TYPE

The TYPE commands provides a quick way to view the contents of text files; that is, files consisting of alphanumeric characters that have been created, for example, with the CP/M ED program.

**T** **Y** **P** **E** filename



The command requires that the full filename is specified.

This example shows the TYPE command used to print out a text file. The CTRL P combination of keys, if transmitted immediately after the filename and before carriage return, will echo the output to the printer. CTRL S will halt the output to console and printer, and also restart it.

```
A>TYPE CHECKLST
WAKE SURE THAT:
DISKS ARE OUT OF THE DISK DRIVES WHEN POWER COMES ON
THE PROPER SYSTEM DISK IS AVAILABLE
ONE OR MORE BLANK DISKS IS AVAILABLE
ALL CABLES ARE CONNECTED
```

```
IT IS IMPORTANT THAT YOU:
HAVE A COPY OF ALL DISKS YOU ARE USING
SAVE FILES FREQUENTLY WHILE EDITING
LABEL DISKS PROMPTLY
FILE AWAY BACKUP COPIES IN A SAFE PLACE
```

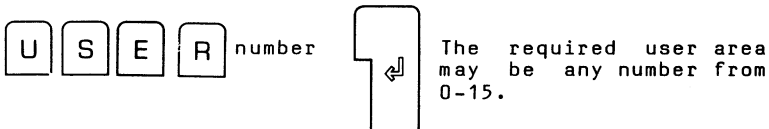
A>

==> To rename files on a disk directory, use the REN CP/M built-in command. For description and an example, go to page 5.3. ==>

## CP/M Built-in Commands

6 USER

The `USER` command logs the operator into one or other of the defined user areas on the disk directory, and allows the user area to be changed. If the command is not used, user area 0 is assumed.



The command allows a number of sets of files to be maintained on the same directory, a facility that is especially useful if you are working with a hard disk. The following example assumes that there are no other user areas on the disk in drive A besides the default area, 0.

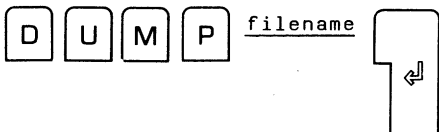
A> STAT USR:

```
Active User : 0
Active Files: 0
A> USER 1
A> DIR
NO FILE
A> USER 2
A> DIR
NO FILE
A> USER 0
A>
```

==> To make it possible to transfer files to other user areas and set up separate directories for each one, a copy of PIP must be placed in these user areas and SAVED, using the `SAVE` command. For a description and an example, go to page 5.4. ==>

6 CP/M TRANSIENT COMMANDS1 DUMP

The DUMP command displays the contents of a file on the screen in hexadecimal code. The file contents are set out sixteen bytes to a line, with the addresses of memory locations to the left. Any file can be dumped in this way, since on disk all files are stored in binary form, for which hexadecimal is only a more convenient notation.



The full filename, including any type extension, must be specified in the command line.

This example shows the screen display resulting from a dump of the SUBMIT file 'RENAME', which is listed on page 6.9.

A>DUMP RENAME.SUB

```
0000 44 49 52 20 24 31 2E 2A 0D 0A 44 49 52 20 24 32
0010 2E 2A 0D 0A 52 45 4E 20 24 33 20 30 24 34 0D 0A
0020 52 45 4E 20 24 35 3D 24 36 0D 0A 44 49 52 20 24
C030 31 2E 2A 0D 0A 44 49 52 20 24 32 2E 2A 0D 0A 1A
```

==> Hexadecimal values may be altered in memory by the DDT (Dynamic Debugging Tool) described in the Reference Guide. CP/M also provides a facility, the USER command, which allows for separate user areas to be defined on one disk and, in conjunction with DDT, for sets of files to be transferred to them. For a description and example, go to page 5.6. ==>

## CP/M Transient Commands

2 ED

ED is CP/M's editor for text files. It allows for the creation of new files, which are typed in a line at a time at the keyboard, the saving of these numbered lines on disk and the retrieval and modification of files by reading into an area of memory called the edit buffer.



filename



The command line must include at least the primary filename. This loads the file into the edit buffer.

The example that follows shows the procedure for the creation of a data file consisting of names and addresses. ED opens a new file if the named file does not exist already. 'I' followed by carriage return signifies that input follows, and input is terminated by CTRL Z (not displayed on the screen). 'E' saves the file.

A>ED PATIENTS

NEW FILE

```

: *I
1: BENJAMIN NEWLAND
2: 49 ROUNDHILL CRESCENT
3: RICKMANSWORTH
4: HERTFORDSHIRE
5:
6: GWENDOLINE WATTS
7: RAILWAY COTTAGE
8: LITTLE GIDDING
9: BUCKINGHAMSHIRE
10:
: *E

```

A>

==> To display the contents of a text file stored on disk, use the TYPE command. For description and example go to page 5.5. ==>



## CP/M Transient Commands

When the ED command is given and a file name specified, the first command within the ED environment must be 'A' (for append). This reads a certain number of lines into the edit buffer. In the following example, the more frequently used ED commands are shown, in the order in which you might use them, with comments and explanations on the right of the page.

```
A>ED PATIENTS
  : *
  : *99A          append 99 lines to edit buffer
  1: *#T          type all lines in the buffer

  1: BENJAMIN NEWLAND
  2: 49 ROUNDHILL CRESCENT
  ...
  9: BUCKINGHAMSHIRE
 10:
  1: *10L         advance 10 lines
 11:I            begin inserting more text
 12:J A PRUFROCK
 12:
 13:PEACHTREA FARM
 14:MUCH HADHAM
 15:HERTFORDSHIRE
 16:            CTRL Z here
 16: *B          go to beginning of file
  1: *12L        advance 12 lines
 13: *T          type the line
 13: PEACHTREA FARM
 13: *8C        advance 8 characters
 13: *1D        delete next character
 13: *IE^Z      insert, E, CTRL Z
 13: *-9C       back 9 characters
 13: *T         type line
 13: PEACHTREE FARM
 13: *-1L       back one line
 12: *1K        kill (delete) unwanted line
  : *H          save changes and return
  : *#A         append all lines in file
  1: *B#T       go to beginning and type all
  1: BENJAMIN NEWLAND
  ...
 14: MUCH HADHAM
 15: HERTFORDSHIRE
  1: *E         save file and exit
```

A>

PIP

PIP (Peripheral Interchange Program) is a file transfer utility, that performs a number of other functions besides the copying of files described below.



The basic form of the command loads the PIP program into memory and begins execution.

The first example shows the command line that you would type to transfer all the files from a system disk in drive A to a second disk, in drive B. The program prompt is always an '\*'. PIP is terminated by entering a blank input line (carriage return).

```
A>PIP
*B: = A:*. *

COPYING -
CBIOS61.COM
CBIOS62.COM
PIP.COM
SUBMIT.COM
...
DUMP.COM
BACKUP.COM
*
A>
```

==> To check the remaining space on the disk after copying files, or for other information on file extents, etc, use the STAT command. For a description and example go to page 6.7. ==>





## CP/M Transient Commands

Some of the command line-types available within PIP are shown below, with a description of their function:

- A>PIP B:SURGERY.SEP=A:PATIENTS  
copies PATIENTS from A to B, renaming it  
SURGERY.SEP
- A>PIP REFERRED = SURGERY.AUG,SURGERY.SEP  
combines the two SURGERY files and names the  
new file REFERRED
- A>PIP LST: = B:SURGERY.SEP  
sends the file to a listing device, usually  
a printer
- A>PIP PRN: = PATIENTS [E]  
as above, only printed with line numbers and  
page breaks, tabs, and echoed on the screen
- A>PIP DATATEST = DATAFILE [G1]  
gets file from user area 1, copies to current  
user area and renames it
- A>PIP B:ADDRBOOK = ADDR.83[L]  
copies file to disk B, renames and translates  
upper-case to lower-case
- A>PIP B: = \*.\* [V]  
copies all files from A to B and verifies that  
data has been written correctly
- A>PIP A:PROGRAMS = B:PROGRAMS [QPROG35^Z]  
copy file until the string 'PROG35' is encount-  
ered, then quit

Other PIP parameters (that may appear in square brackets)

- Dn - Delete any characters past column n  
F - Filter form feeds from source data  
H - Test for valid Hex format  
N - Number output lines  
O - Object file transfer ^ Z ignored  
Pn - Set page length to n, default 60

## CP/M Transient Commands



R - Read files set to SYS (system)  
 Ss^Z - Start copying from source file at string s  
 Tn - Expand tabs to n spaces  
 U - Translate lower-case to upper-case  
 W - Write over files set to read-only  
 Z - Zero the parity bit

PIP Logical Devices

CON - Console device (send to screen)  
 LST - List device (send to printer)  
 PUN - Punch device (send to communications port)  
 RDR - Reader device (read from communications port)

The STAT command may be used to return information on the mapping of logical to physical devices. The commands are:

STAT VAL:

which returns a list of possible device assignments, and:

STAT DEV:

which returns the current assignments.

Additional Valid Device Names

NUL - Sends 40 'null' characters (ASCII 0) to PUN  
 EOF - Sends end of file to destination device  
 INP - Input source can be patched into PIP program  
 OUT - Output can be patched into PIP  
 PRN - As LST, with expanded tabs, line numbering etc

PIP Physical Devices

TTY - Console, terminal, reader, teletype  
 CRT - Console, terminal, CRT device  
 PTR - Paper tape or card reader  
 PTP - Paper tape or card punch  
 LPT - List device, line printer  
 UC1 - User-defined console  
 UR1 - User-defined reader  
 UR2 - User-defined reader  
 UP1 - User-defined punch  
 UP2 - User-defined punch  
 UL1 - User-defined listing device



4

STAT

The STAT command returns information relating to disk space, file size, number of records, etc - and allows disk read-only or read-write attributes to be set or changed.

S T A T



The basic form of the command gives the status for all the active drives.

The following example assumes that the system disk is in drive A and that there is a backup disk in drive B, onto which the files on the first disk have been copied. The status for the file CBIOS63.COM is then checked.

```
A>STAT
A: R/W, Space 134k
B: R/W, Space 134k
```

```
A>STAT CBIOS63.COM

  Recs  Bytes  Ext Acc
   174   22k   1 R/W A:CBIOS63.COM
Bytes Remaining on A: 134k
```

==> To create a new text file, or to modify an existing one, use the text editor program, ED. For a description and an example, go to page 6.2. ==>

## CP/M Transient Commands



Further examples of the use of the STAT command follow. The disk is assumed to be double-sided, (640K capacity).

A>STAT PIP.COM \$S

Size	Recs	Bytes	Ext	Acc
58	58	8k	1	R/W A:PIP.COM

A>STAT \*.\* \$S

Size	Recs	Bytes	Ext	Acc
1	1	4k	1	R/W A:CODETEST
50	50	8k	1	R/W A:CONFIG.COM
1	1	4k	1	R/W A:CONFIG.MSG
38	38	8k	1	R/W A:DDT.COM

...

Bytes Remaining on A: 82k

A>STAT DSK:

A: Drive Characteristics  
 5056: 128 Byte Record Capacity  
 632: Kilobyte Drive Capacity  
 128: 32 Byte Directory Entries  
 512: Records/Extent  
 32: Records/Block  
 32: Sectors/Track  
 2: Reserved Tracks

A>STAT MASTER.TXT \$R/O

MASTER.TXT set to R/O

ERA MASTER.TXT

Bdos Err On A: File R/O

A>STAT MASTER.TXT \$R/W

MASTER.TXT set to R/W

A>STATUSR:

Active User : 0  
 Active Files: 0 1

5 SUBMIT

The **SUBMIT** command allows a number of CP/M commands to be submitted together for consecutive execution by the operating system. The commands are first of all typed into a file, using the ED facility, in which variable names take the place of specific filenames or disk names. These variables are indicated as \$1, \$2, \$3, and so on. This 'submit' file is given a 'SUB' postfix, which can be recognised by the **SUBMIT** command. Then, when the particular command sequence contained in this SUB file needs to be performed, the **SUBMIT** command is given followed by the specific file or drive names required.

**S** **U** **B** **M** **I** **T**    subfilename var1 var2.. ↵

The following example repeats the procedure for displaying the directory and renaming files, set out on page 5.3, in the form of a **SUBMIT** command. The file created by the ED program for this purpose would appear as listed below after the **TYPE** command. The **SUBMIT** command itself, with specific names, follows.

```
TYPE RENAME.SUB
DIR $1.*
DIR $2.*
REN $3 = $4
REN $5 = $6
DIR $1.*
DIR $2.*
```

```
A>SUBMIT RENAME A: B: 559CASES PATIENTS B:CHECKLST.TXT CHECKLST
```

==> The **DUMP** command provides a display of the contents of a file in hexadecimal format. For description and an example go to page 6.1. ==>

6 SYSGEN

This command copies the reserved tracks (containing CP/M) from the system disk and writes them to a blank disk. This is necessary to create a backup copy of the operating system, since CP/M is not a file and cannot be transferred by PIP, the file copying program.



This is the command as you would type it to load the program.

In the example that follows, the prompts and responses given assume the system disk in drive A, and a blank disk in drive B, to which CP/M is to be copied.

```
A>SYSGEN
SYSGEN VER 2.2
SOURCE DRIVE NAME (OR RETURN TO SKIP)A
SOURCE ON A, THEN TYPE RETURN
FUNCTION COMPLETE
DESTINATION DRIVE NAME (OR RETURN TO REBOOT)B
DESTINATION ON B, THEN TYPE RETURN
FUNCTION COMPLETE
DESTINATION DRIVE NAME (OR RETURN TO REBOOT)
A>
```

==> To copy the files from drive A to drive B, and so complete the back up procedure for the system disk, use PIP (CP/M's Peripheral Interchange Program). For description and examples, go to page 6.4. ==>



## Error Messages

7 ERROR MESSAGES

CP/M's BDOS (BASIC DISK OPERATING SYSTEM) will produce an error message - one of a small number of similar format whenever you give a command, involving a disk specification, that cannot be carried out.

Error message: Bdos Err On B: Bad sector  
Occurs when: The disk surface is worn or, more usually, the disk is not in the drive specified or the drive door is not closed properly.  
Recover by: Pressing CTRL C to reboot the system. Make sure you have backup copies of the disks you are using.

Error message: Bdos Err On J: Select  
Occurs when: You select a disk drive name that does not exist in your configuration.  
Recover by: Pressing RESET, to re-boot the system, ('cold boot').

Error message: Bdos Err On B: R/O  
Occurs when: the disk you are trying to write to has been designated as read-only, or when there is a newly-inserted diskette, and you have not re-booted the system with CTRL C.  
Recover by: Pressing any key, which will re-boot the system and change the status of the diskette so that it may be written to.

Error message: Bdos Err On B: File R/O  
Occurs when: You have attempted to overwrite a file, previously designated as read-only.  
Recover by: Pressing any key; then use the STAT command to change the file attribute to read-write.



## 8 BACKUP FOR HARD DISKS

### 8.1 Using BACKUP

The purpose of this utility is to copy hard disk volumes onto 5.25" floppy disks, or to restore volumes from these backup disks.

In order to provide an additional degree of data security, the floppy disks used to backup a volume are serialised during the process and cannot then be overwritten immediately. The next backup must be made onto another set of disks. Furthermore, the backup program 'links' the disks to either the upper or the lower volume. For example: the contents of a lower volume, stored on a particular set of disks, cannot then be restored to an upper volume, and, similarly, an upper volume cannot be copied to disks that have been used to store the contents of a lower volume. The number of occupied blocks on the hard disk volume is also checked by the program to ensure that the volume is the correct size.

To call the program under CP/M type:

```
A> BACKUP
```

The first screen displayed by the program will look like the one shown at the top of the following page. Each of the lines to the right of the screen are displayed individually; as you type in a valid response to a prompt, (example responses are given), the next line appears.



## Backup for Hard Disks

HARD DISK BACKUP PROGRAM

Enter todays date : 29/11/83  
Enter hard disk volume (A,B...P) : A  
Enter 1st backup volume (A,B...P) : C  
Enter 2nd backup volume ( or (CR) ) : D

- 1 - Backup
- 2 - Restore

Select : 1

Enter 1, 2 or (ESC) to indicate whether you wish to backup, restore or exit. (It is not necessary to press return after any entry in connection with this program). If you select 1 or 2, an additional prompt will be displayed beneath the others. Depress any key at this point and the backup process will start.

The following information applies equally to the process for restoring data from backup since both procedures use virtually the same prompts.

HARD DISK BACKUP PROGRAM

Enter todays date : 29/11/83  
Enter hard disk volume (A,B...P) : A  
Enter 1st backup volume (A,B...P) : C  
Enter 2nd backup volume ( or (CR) ) : D

- 1 - Backup
- 2 - Restore

Select : 1

Insert disk 1 in Drive C  
Type any key to continue ( (ESC) to abort ) :



## Backup for Hard Disks

A message indicating which drive is currently receiving or sending data to the hard disk will be displayed. This will change as the program fills up the disk in one drive and starts transferring data to or from the next disk. You will be prompted when it is necessary to insert a new disk. The process continues until a complete volume has been transferred.

There are a number of help or warning messages that you may encounter during the operation of the BACKUP.COM program. The most important are described below:

<u>Message</u>	<u>Indicates:</u>
Latest backup, use another	That you have a disk from the most recent backup series for that volume in the drive.
Bad serial-number of the disk	That there is a disk that has not been serialised for use with that volume.
Restore disk out of sequence	That the disk in the drive does not have the expected number for correct restoration of data.
Restore volume is wrong size	That the floppy disk is serialised for use with a bigger or smaller hard disk volume.

When the process has finished, the 'insert disk' message will be replaced with a 'process complete' message, and you will be able to restart the process directly, should you wish to copy or restore another hard disk volume.

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# P 2519 CP/M USER GUIDE

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Manual Status Control Sheet

Manual Name: P2519 CP/M USER GUIDE

5103 993 21922

# P 2519 CP/M USER GUIDE

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Manual Comment Form

Manual Title: P2519 CP/M USER GUIDE

5103 993 21922

Originator:

Name

Address

Comment (if possible, add a copy of the page(s) affected by the comment, marked with the proposed changes)

Please return this form to: Philips Austria  
Personal Computer Division EFW-M  
Breitenseerstrasse 116  
A-1141 Vienna  
A U S T R I A