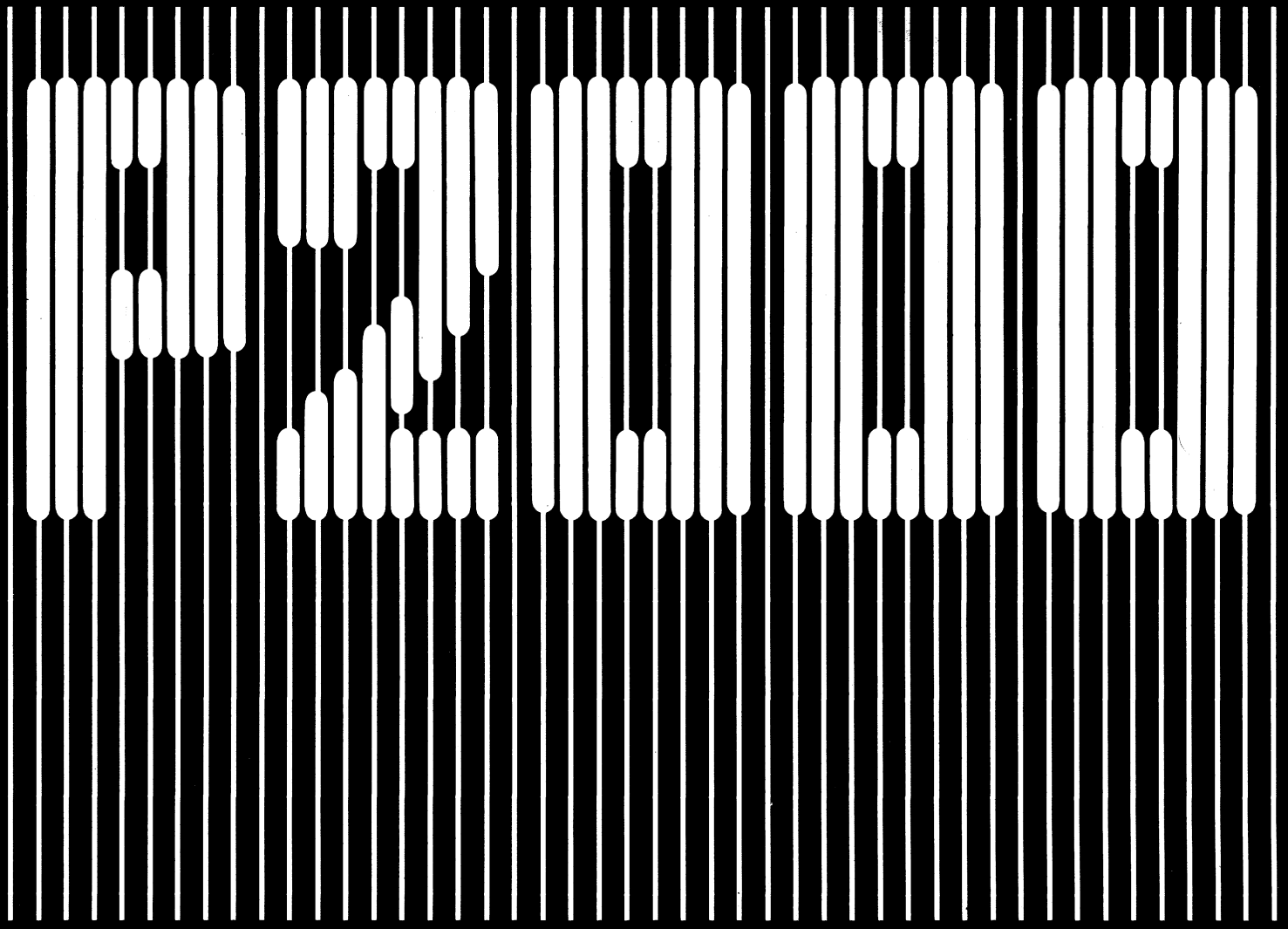
PHILIPS

P2206
BASIC R T S
OPERATOR MANUAL

MICRO COMPUTER SYSTEMS





Data
Systems

PHILIPS

P2206

BASIC RUN-TIME SYSTEM
OPERATOR MANUAL

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Preface

This manual describes the operation instructions and start-up procedures of the P2206 BASIC Interpreter Run-time System (R.T.S.). This system is designed to be used by people with no experience of the BASIC language. Before using the supplied disk, read Chapters 1 & 2 on how to start, configure and initialize your system. Chapter 3 discusses the P2500 disk utility VOLORG, which is required for disk organisation.

Do not overlook the Appendixes, which cover error messages and a recommended backup procedure. These points will give you a better understanding on how to handle your disks.

Instructions for the start-up procedures and usage of application software designed to run under this system are described in the relevant manuals. For this reason, no attempt is made to describe these procedures in this manual; it is only intended as a supplement to the manuals dealing with the application software.

If you are interested in both executing your present application programs and developing your own BASIC programs, the companion P2211 BASIC Interpreter Development System is designed for this purpose.

Related documents:

P2500 Operator Manual (5103 992 30121)

P2211 BASIC Interpreter Operator Manual (5103 992 21122)

Page Layout

The pages in all P2000 manuals are arranged as follows:

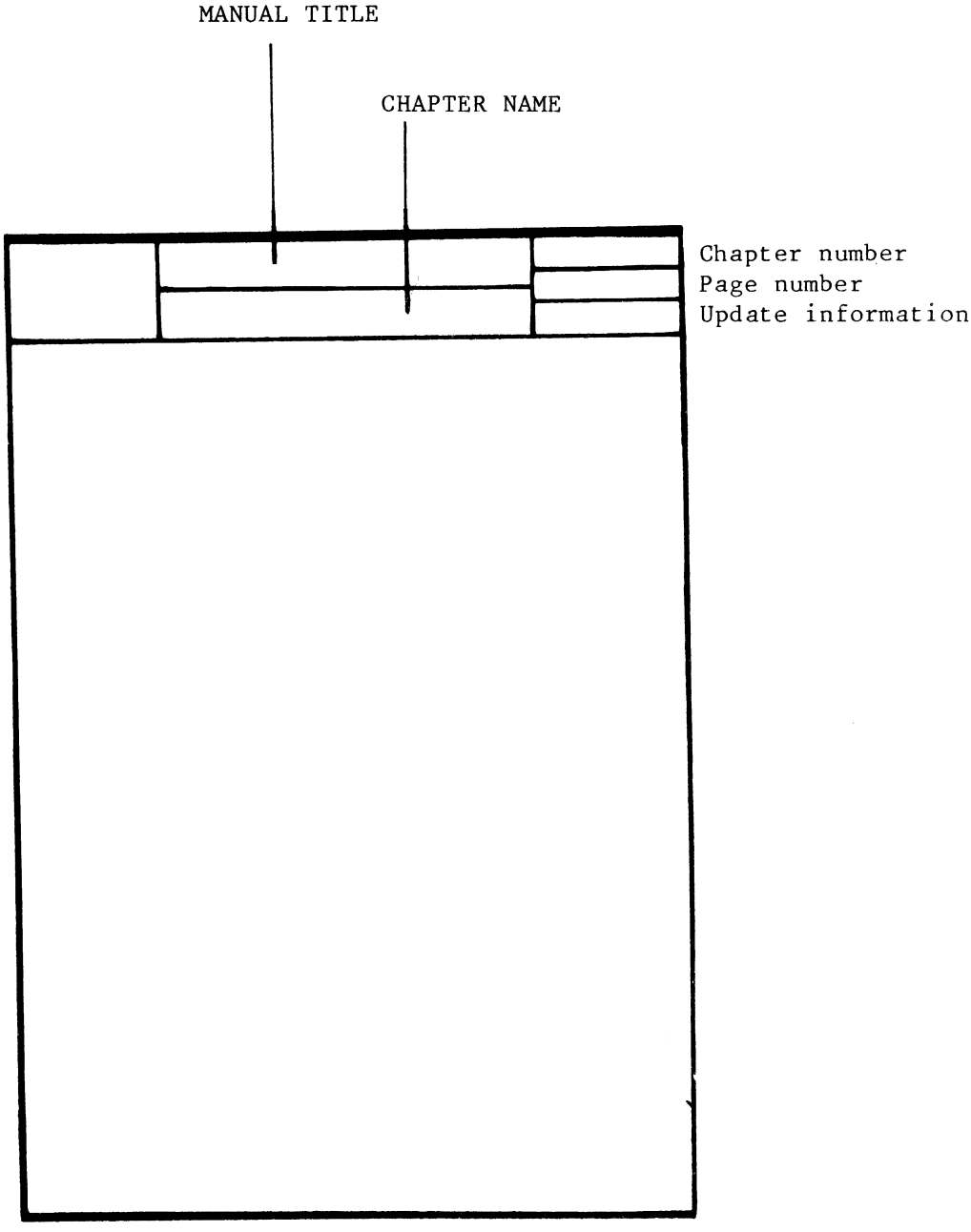


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1 INTRODUCTION

The BASIC Interpreter Run-time System enables you to execute application packages designed for use in this environment.

The purpose of the Run-time system is to minimise the amount of specialised knowledge needed by the user. The inner workings of the system are hidden by the R.T.S. to such an extent that the user need only concern himself with the operation of the application being used.

1.1 ELEMENTS OF THE SYSTEM

The system consists of the following elements:

- The Microsoft BASIC Interpreter (Revision 5.20)
- VOLORG: the disk organisation utility
- CONFIG: the system configuration program
- KSAM80: the keyed sequential file access routine
- KSAMUT: a utility for handling KSAM 80 files
- The BACKUP utility for transferring hard disk volumes to and from five-inch disks

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:

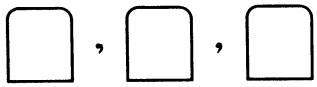
- You should press just one key:



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



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



2 STARTING UP THE SYSTEM

2.1 STARTING UP THE SYSTEM FOR THE FIRST TIME

To start the system, switch on the monitor, the console and (if necessary) the disk-drive unit. Insert the SESAM-Key in its slot on the right-hand side of the console.

Remove the write-protect tab from the System disk and insert the disk into the left-hand disk-drive. Close the door of the drive carefully and then press the reset button on the console. Now wait for the system to boot; if you have any problems at this stage, the Philips P2500 Microcomputer screen will be displayed; in such a case, check to see if you have inserted the disk correctly in the drive, and press the reset button again.

After you have pressed the reset button, the first thing the system does is to initialize the system disk. The following message appears on the screen:

```
PROGRAM INITIALIZATION Version 2.1

Please ensure that the write protect tab is removed from
the system disk

During the execution of this program
do NOT disturb the system,
until initialization is complete

(NOTE: The process takes about 40 seconds).

PRESS SPACE TO CONTINUE
```

After you have checked the disk and pressed the Space bar, the System disk is initialized automatically, and the message

```
INITIALIZATION IN PROGRESS
```

is displayed while this occurs. Once the system has booted successfully, the operating system will be loaded and your System disk will be initialized. The following message will be displayed:

```
INITIALIZATION COMPLETE
```

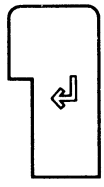
From now on, your disk is protected, and you may only use that disk in combination with the SESAM-Key that is currently inserted.

At this stage, the prompts from the Configuration program will appear on your screen. The first of these is:

```
AUTOSTART DEFINITION AND CONFIGURATION PROFILE

How many files (1-15) current: 3, default: 3      ?
```

This prompt asks you to enter the maximum number of disk data files that may be open at any one time during the execution of a BASIC program. Each disk data file is allocated 434 bytes of memory for when it is read in from disk. To reply, enter the maximum number of disk data files, followed by:



This key is known as carriage return. If you want to have the default value of three files, simply press carriage return without entering any value.

Once you have replied, a second prompt is displayed:

```
File to be automatically loaded, current: CONFIG , default:
none ?
```

This prompt asks you to name the program file which will be loaded automatically when the system is started in the future. The format for your reply is:

```
d:ffffffff
```

The d represents the disk drive name on which the file will be found; the default is A, so you do not have to supply this unless you wish the system to look for the file on another disk drive. (Please refer to page 8-6 for drive naming conventions.) The ffffffff represents the file name of the program file which you wish to nominate. The extension .BAS will be appended to the specified name.

Note - Make sure that the specified file is on the disk in the specified drive. If the file does not exist, the program will not accept your entry. Do not delete or rename the file after you have specified it as an autoload file; the system will otherwise hang during start-up, and you will have to use your backup disk.

If you do not wish any file to be loaded automatically when you boot the system, simply press carriage return without entering any file name. In future, when you boot the system, you will be taken into BASIC at command level.

This completes the first part of the Configuration program. Between the autostart definition and the configuration profile, which is the second part of the program, this menu will be displayed:

```
CONFIGURATION MENU

0  EXIT TO BASIC

1  AUTOSTART DEFINITION
2  CONFIGURE SYSTEM


SELECT:
```

At this point in the program, you may either go back to specify a file to be loaded automatically on startup, go on to define the hardware configuration that you are using, or quit and return to BASIC at command level.

The Configuration Profile, and the commands used to modify it, is described on the following pages.

The purpose of the Configuration Program is to specify to the operating system precisely which input and output devices you are using. It also enables you to install the system onto another disk - this subject is covered in Chapter 4; The Configuration Program, in Section 3; Installing the System.

The program will be loaded directly following disk initialization; or it can be run by typing in the program name against the BASIC prompt:

```
Ok
RUN "CONFIG"
```

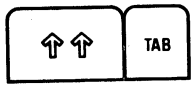
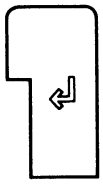
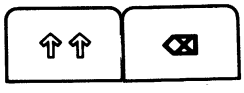
This screen will be displayed:

C O N F I G U R A T I O N P R O F I L E

PRINTER	DISK	KEYBOARD	SERIAL I/O
1 ASCII	**1 5" & HD**	**1 ASCII**	**1 SV24**
2 MT100	2 5"SS & DS	2 CH	2 75 BD
3 MT100.TR	3 5" & 8"	3 D/A	3 110 BD
4 P2121.BIL	4 5" DS & 8"	4 DK/N	4 135.5 BD
5 P2121.ESA	5 5" SS	5 E	5 150 BD
6 P2123.DA	6 HD ONLY	6 F	6 300 BD
7 P2123.F		7 I	7 600 BD
8 P2131.SSF		8 P	8 1200 BD
9 P21213.UKE		9 S/SF	9 1800 BD
10 PRIVATE		10 TR	10 2000 BD
		11 UK/NL	11 2400 BD
	SYSTEM		12 3600 BD
			13 4800 BD
	1 CURRENT		14 7200 BD
	2 5" SS		15 9600 BD
	3 5" DS		16 19200 BD
	4 HD		

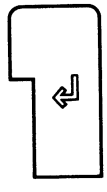
One entry in each column is highlighted in inverse video, representing the current configuration profile. Similarly, one of the column headers is highlighted, indicating the column that may currently have its configuration altered.

The commands used to change the profile and accept the new settings are described below:

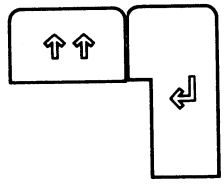
KEY	FUNCTION
	Moves the highlight to the right from column header to column header in a cyclic manner.
	Back tab, opposite of the above.
	Leaves the program without updating the previous configuration.
	Accepts the choice for a given column, highlighting the choice in inverse video.
	Used to correct entries in the input field.
	Negates change made to the currently selected column, clears the input field and redisplays the original selection.

Define the configuration that you require as follows:

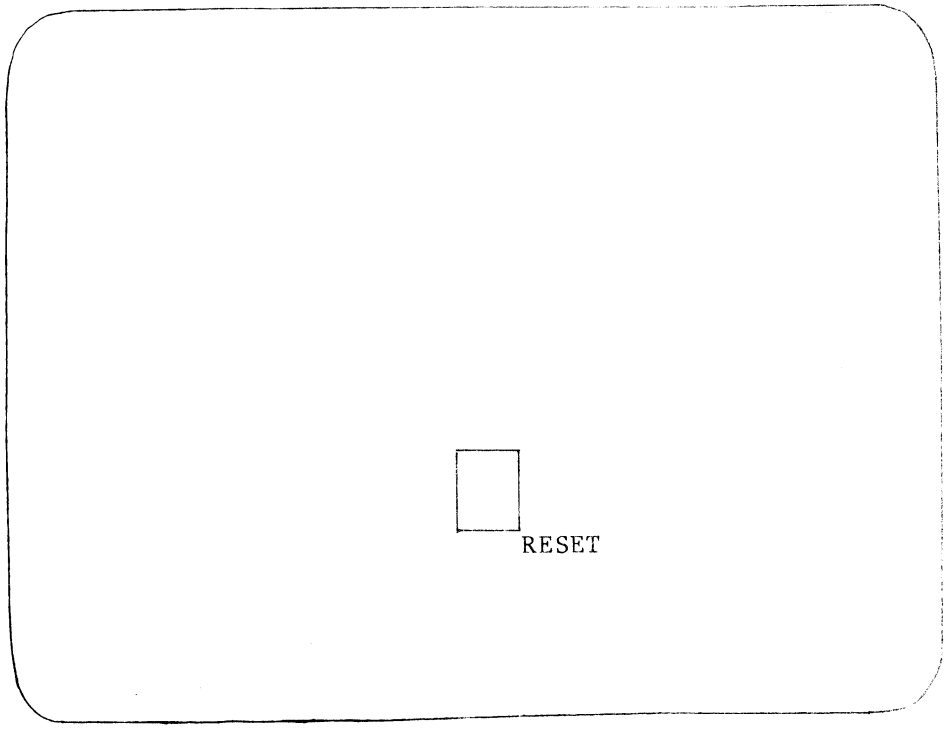
- Move the highlight to the appropriate column
- Enter the number of your selection
- Press:



When you have set up the required configuration to your satisfaction, by means of these commands, accept the configuration profile by pressing:



The program will then display the screen shown below and halt.



At this point, pressing the 'RESET' button on the front panel of the CPU will cause the new configuration to be implemented.

2.2 NORMAL START-UP

To perform a normal start-up of the system, first switch on the monitor, console and (if necessary) disk-drive unit. Insert the SESAM-Key in its slot on the right-hand side of the console (remember that once the disk has been initialized it is protected, and must be used in combination with the correct SESAM-Key). Insert the system disk into the left-hand disk-drive and close the door of the drive carefully. Finally, press the reset button on the console and wait for the system to boot.

If you have not inserted a SESAM-Key or have inserted the wrong SESAM-Key, the system will not boot and the following message is displayed:

```
INIT ERROR
```

If this happens, insert your SESAM-Key and press the reset button again.

If there are problems in booting the system, the Philips P2500 Microcomputer screen will be displayed. In such a case check to see that you have inserted the disk correctly, and press the reset button again.

Once the system has been booted successfully, the information displayed on the screen will depend on the automatic file loading you have specified in the Configuration Program (either during the first start-up of the system or by subsequent running of CONFIG). If you have specified a file to be loaded automatically, then the information displayed will be controlled by that program. VOLORG, for example, will display the VOLORG opening menu, just as if you had typed RUN "VOLORG" from the BASIC command level. If you have not specified any file to be loaded automatically, then you will arrive directly at the BASIC initial screen. This is shown below.

```
BASIC - 80  Rev. 5.2
(CP/M  Version)
Copyright  1977,78,79,80  (C) by Microsoft
Created: 14-Jul-80
xxxxx  bytes free
OK
```

Note - The number of free bytes depends on your current configuration.

3 THE VOLORG UTILITY

The VOLORG (Volume Organisation) utility is a program which gives you an easy means of organising disk space. Like any other BASIC program, it is executed by the RUN command:

```
RUN "VOLORG"
```

When VOLORG is run, the following menu is displayed:

```
P2500          DISK UTILITY          rel. x.y

0 = LOAD AND RUN PROGRAM
1 = Disk directory and free space
2 = COPY file
3 = COPY disk
4 = DELETE file
5 = DELETE disk
6 = RENAME file
7 = File size
8 = Compare disks
E = EXIT to command mode
R = RESET after disk change or error

select
```

In the menu heading, "rel. x.y" represents the current release number.

If this menu is not displayed, check that the system disk is correctly inserted in the left-hand drive (drive A), then type in the command again.

The various options on the menu are explained in the rest of this Chapter. The first time you use VOLORG will be to make a back-up copy of your system disk; use option number 3 to do this.

Note - Use the VOLORG functions 2, 3, 4, 5, and 6 with care, since they will physically change the contents of a disk. Make sure at all times that the correct disk(s) is in the correct drive(s).

3.1 REPLYING TO VOLORG MENU PROMPTS

To choose one of the VOLORG options, enter the appropriate number, without pressing carriage return. The next display appears immediately, and will naturally differ according to the option chosen.
Once you have chosen an option, you will then be given one or more prompts for further information. If you press carriage return alone to answer to any of these prompts, you will be taken back to the previous prompt, or to the VOLORG main menu if the prompt you replied to was the first in the option.
Prompts within VOLORG usually require you to enter disk-drive names or file names.

Warning - Take great care when specifying a disk-drive in response to a VOLORG prompt. If you specify a drive which is not in your configuration or if the disk is not correctly inserted in the drive you specify, the system will not be able to read from or write to that drive. The result will be a Bdos error, after which you will have to reboot the system by pressing reset. Refer to Appendix A for a description of System error messages.

A file name can be specified in one of two ways. You can supply the simple file name of up to eight characters or the full file name; this consists of up to eight characters plus a three-character extension, these two parts being separated by a full stop. On some occasions, you must supply the full file name in response to a prompt; this manual will say when that is required.

The following are examples of valid file names:

```
DATA
PROGRAM.BAS
FILE.DAT
```

The following is an example of an invalid file name:

```
MUCHTOOLONG.BAS
```

When each option has carried out its task, the message:

```
FUNCTION COMPLETED: C = CONTINUE, ELSE EXIT
```

appears in the bottom right-hand corner of the screen. Pressing "C" in reply to this prompt will return you to the opening prompt of the option you are in; pressing any other key on the alphanumeric keypad will return you to the VOLORG main menu.

3.1.1 Option 0: Load and Run Program

This option has the same effect as typing "E" (EXIT to command mode) followed by the BASIC command Run. The 0 option displays the following prompt:

```
L O A D  A N D  R U N  P R O G R A M

Which drive:
```

Reply to this by entering a disk-drive name, followed by carriage return. The system will search this drive for the program that you wish to run. When you enter a valid drive name followed by carriage return, the next prompt appears underneath:

```
Filename:
```

Reply to this by entering the file name of the program that you wish to run, followed by carriage return. The named program is then executed. If the named file is not found, the message:

```
FILE NOT FOUND
```

is displayed. Type any key to return to the drive name prompt.

3.1.2 Option 1: Disk Directory and Free Space

This option displays the directory of a disk, and the free space left on that disk in kilobytes.

Typing 1 in response to the VOLORG main menu causes the following prompt to be displayed:

```
D I R E C T O R Y  A N D  F R E E  S P A C E

Which drive:
```

Reply to this prompt by typing the name of a valid disk drive, followed by carriage return. The first 64 entries on the directory of the disk in the nominated disk drive will then be displayed, along with a message above telling you how much free space is left on the disk. The following prompt appears below the displayed directory:

```
turn page = 1  print screen = P
```

If there are more than 64 entries on the directory, the rest of the directories can be displayed in turn by pressing "1". If you want a print-out of that page of the directory, press "P", but you must make sure that the printer is switched on and properly connected before you do so.

When you are finished looking at or printing the directory, press any key except 1, and the prompt:

```
FUNCTION COMPLETED: C = CONTINUE, ELSE EXIT
```

is displayed.

3.1.3 Option 2: Copy File

This option copies a file from a disk on one specified drive to another specified drive. The copy can have either the same file name as the original or a different one.

Typing in 2 in response to the VOLORG main menu causes the following display:

```
COPY FILE

(SOURCE) Which drive:
```

Insert the disks you wish to use in the drives, and make sure that the write-protect tab is removed from the disk to which the file will be copied. Reply to the prompt by typing in the name of the disk-drive, followed by carriage return. This must be the drive in which the disk with the file to be copied is inserted. The next prompt appears underneath.

```
Filename:
```

Enter the name of the file that you wish to be copied, followed by carriage return. The next prompt appears underneath.

```
(DESTINATION) Which drive:
```

Type in the name of the drive, followed by carriage return. This must be the drive which contains the disk to which the file will be copied. The next prompt appears underneath.

```
Filename:
```

Type in a file name, followed by carriage return. This will be the file name of the file once it has been copied to the other disk; it can be either the same name as the original, or a different one.

Once you have typed in the last prompt, the system will copy the file. When the copy is complete, you are returned to the prompt:

```
FUNCTION COMPLETED: C = CONTINUE, ELSE EXIT
```

3.1.4 Option 3: Copy Disk

This option copies the contents of a disk on one specified drive to another specified drive. This is the first option in VOLORG that you will use when you make the original back-up copy of your system disk. If the recommended normal back-up procedures are followed, this will be the VOLORG option that you use the most.

When you type 3 in response to the VOLORG main menu, the following prompt is displayed:

```
C O P Y  D I S K

1 = Copy 5-inch disks A to B
2 = Copy 8-inch single-density E to F
3 = Copy 8-inch double-density G to H

Select:
```

Enter the appropriate number according to the type of disk which is being copied. The following prompt then appears:

```
put source disk into drive x (left drive)

put target disk into drive y (right drive)


press SPACE - key if ready, any other to exit
```

In this prompt, "x" and "y" represent the names of the drives containing the disks to be copied, as specified in the previous prompt. Place the disks in the drives, as indicated in the prompt, remembering to remove the write-protect tab from the disk to which the copy will be written. Check that the disks are correctly loaded in the drives before pressing the Space bar; the system will then copy one disk to the other. Once the copy has been made successfully, the following prompt appears:

```
FUNCTION COMPLETED: C = CONTINUE, ELSE EXIT
```

Note – Pay special attention to your back-up procedures. A recommended procedure is given in Appendix B.

3.1.5 Option 4: Delete File

This option deletes a specified file from the directory.

When you type 4 in response to the VOLORG main menu, the following prompt is displayed:

```
D E L E T E  F I L E

 Which drive:
```

Reply to this by typing in the name of a valid disk drive, followed by carriage return. The next prompt then appears underneath:

```
 Filename:
```

Type in the full file name of the file that you wish to be deleted, followed by carriage return. The system will then delete the file you have specified. If the file cannot be found, the message:

```
FILE NOT FOUND
```

will appear flashing in the bottom right-hand corner. Pressing any key on the alphanumeric pad will return you to the first prompt.

If the deletion is successful, you are returned to the prompt:

```
FUNCTION COMPLETED: C = CONTINUE, ELSE EXIT
```

3.1.6 Option 5: Delete Disk

This option deletes all the entries on the directory of a specified disk.

When you type 5 in response to the VOLORG main menu, the following prompt is displayed:

```
D E L E T E  D I S K

Which drive:
```

Reply to this by typing the name of a valid disk drive, followed by carriage return. The disk on that drive will then have the contents of its directory removed.

A successful deletion of the disk will return you to the prompt:

```
FUNCTION COMPLETED: C = CONTINUE, ELSE EXIT
```

3.1.7 Option 6: Rename File

This option enables you to rename a file.

When you type 6 in reply to the VOLORG main menu, the following prompt is displayed:

```
R E N A M E  F I L E

 Which drive:
```

Reply to this prompt by typing a valid disk drive name, followed by carriage return. This must be the drive containing the disk with the file you wish to rename. When you have done this, the next prompt appears underneath.

```
 Filename old:
```

Type in the full file name of the file whose name you wish to change, followed by carriage return. The next prompt appears underneath.

```
 Filename new:
```

Type in the full file name that you wish your file to be changed to, followed by carriage return.

Once both prompts have been answered, the renaming is carried out by the system. If the old file name is not found (either because the full file name has not been specified or because the file is not present on the specified disk), the message:

```
FILE NOT FOUND
```

appears flashing in the bottom right-hand corner of the screen. Typing carriage return at this stage will return you to the first prompt so that you can try again.

If the change of name is successful, the message:

```
FUNCTION COMPLETED: C = CONTINUE, ELSE EXIT
```

appears in the bottom right-hand corner of the screen.

3.1.8 Option 7: File Size

This option displays the size of a file in sectors (1 sector = 256 bytes).

When you type 7 in reply to the VOLORG main menu, the following prompt is displayed:

```
F I L E  S I Z E

Which drive:
```

Reply to this prompt by typing a valid disk drive name, followed by carriage return. This must be the drive containing the disk with the file whose size you wish to know. When you have done this, the next prompt appears underneath.

```
Filename:
```

Type in the full file name of the file whose size you wish to know, followed by carriage return. The file size in sectors is now printed underneath. At the same time, the following prompt appears at the bottom of the screen:

```
FUNCTION COMPLETED: C = CONTINUE, ELSE EXIT
```

3.1.9 Option 8: Compare Disks

This option compares the disks in drives A and B and reports if their contents are the same or not.

When you type 8 in reply to the VOLORG main menu, the following prompt is displayed:

```
COMPARE DISKS

1 = Compare 5-inch disks A to B
2 = Compare 8-inch single-density E to F
3 = Compare 8-inch double-density G to H

Select:
```

Enter the appropriate number, according to the type of disk you want to compare. The following prompt then appears:

```
insert disk into drives x and y and press SPACE - key
```

In this prompt, the "x" and "y" will be the names of the appropriate type of drive, as selected from the previous prompt. When you press the Space bar on the keyboard, the disks will be compared by the system.

If the disks are not equal, the following prompt appears flashing in the bottom right-hand corner of the screen:

```
DISKS NOT EQUAL
```

Press any key on the alphanumeric pad to reach the Continue prompt.

If the contents of each disk are the same, the system will spend a short time checking them before the Continue prompt is displayed.

3.1.10 Option E: Exit to Command Mode

This option causes the VOLORG utility to finish.

When you type "E" in response to the VOLORG main menu, the menu disappears. You are returned to BASIC command mode, and the Ok prompt appears at the top of the screen.

3.1.11 Option R: Reset After Disk Change or Error

After you have placed a different disk in a disk drive, you should press "R". The system will then read the directory of the new disk into memory. If you do not do this, the system will still consider that you have the old disk in the drive.

After pressing "R", you are returned directly to the VOLORG main menu.

4 THE CONFIGURATION PROGRAM

We have already seen the Configuration program in use during the first start-up of the system. This is dealt with in Chapter 2. The Configuration program has two parts; the first enables you to select a file which will be loaded automatically when the system is started up in the future; the second part enables you to inform the system of the current hardware configuration, or to install the system onto another disk.

If you wish to change the values that you have specified during the first start-up, you can simply use the RUN command to execute the Configuration program again.

The screen prompts of the Configuration program are already dealt with in section 2.1. This Chapter is intended as a guide to give you a fuller understanding of the program.

4.1 AUTOSTART

When you enter the command RUN "CONFIG", you are taken into the Autostart section of the Configuration. If you wish to change the previously specified Autostart values, all you need to do is to reply to the prompts.

Note - If you only wish to change the values in the second part of the Configuration program, you must still reply to these prompts in the first part.

4.2 CONFIGURATION PROFILE

After you have replied to the two prompts in the first section of the Configuration program, the system waits a few moments before showing the screen for setting the hardware configuration (see section 2.1). This display shows the types of printer, disk-drive and keyboard which can be configured.

4.2.1 Printers

Printers are listed on screen according to their Philips catalogue number. There are three basic types of printer:

Cat. Number	Type of Printer
P2121	TEC Daisy-Wheel
P2123	EPSON Matrix

In the list displayed on the screen, each catalogue number is followed by an extension. For the daisy-wheel printer, BIL or ESA; these represent the type of daisy-wheel which is attached to the printer (BIL=bilingual, ESA=European/South American). For the matrix printer, the extensions represent the national versions of the printer (e.g., I=Italian, S/SF=Swedish/Finnish).

Remember to specify a new configuration if you change printers (or even if you change the daisy-wheel on your printer). If you do not do so, some of the characters output to the printer might be printed incorrectly.

4.2.2 Keyboards

Keyboards for the P2500 are supplied in several different national versions. When the types of keyboard are listed on the screen, they are represented by their appropriate national symbol (like the national versions of the matrix and ink-jet printers), with the exception of the ASCII keyboard. Make sure that you specify the correct keyboard. If you do not, when you run the system in future, it will misinterpret some of the characters that you input at the keyboard.

4.2.3 Disk Configuration

The P2206 BASIC Run-time System supports five-inch, eight-inch and hard disk formats. To save memory space when you are using five-inch disks, you can configure your system accordingly. The configuration used is known as the 58K system configuration.

The eight-inch system allows you to use eight-inch disks. This configuration supports 57K bytes of Transient Program Area (TPA).
The hard disk environment, which has a TPA of 56K bytes, supports two volumes of a hard disk of 2.5M bytes each. Hard disk volumes can be transferred to floppy disks using the BACKUP utility (described in Chapter 5).

4.3 INSTALLING THE SYSTEM

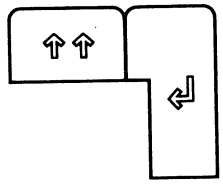
You may install the BASIC interpreter onto a 5" single-sided, a 5" double-sided or a hard disk. If you wish to do this, you should first accept the preset environment (5" & HD), and re-boot the system. You will then be able to install the system onto the disk you require, by following one of the procedures described below.

4.3.1 Installing Onto a 5" Double-Sided Disk

You must have a double-sided disk drive to install the system on a double-sided disk: (Philips product number P2150).

1 Run CONFIG and, using the commands shown on page 2.5, set up the configuration profile that you wish to install, selecting options for 'PRINTER', 'DISK', 'KEYBOARD' and 'SERIAL I/O'.

2 Under the 'SYSTEM' option, select 3 (5" ds). Accept the configuration by pressing:



The system will prompt you as follows:

put 5" diskette in righthand drive, type space to continue

3 A possible error message at this point is:

error writing to new volume

which will be displayed if the disk has not been inserted into the disk drive, or if the disk is incorrectly formatted.

4 The system will indicate that the installation process is taking place by displaying this message:

making new system volume

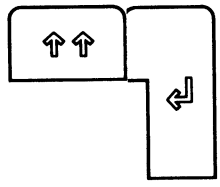
and this will be followed by a return to MBASIC.

4.3.2 Installing the System Onto a Hard Disk

1 The system may be installed onto a hard disk that has been initialized with the hexadecimal character 'E5', over at least the directory tracks. This may be carried out by your dealer or by your Philips Local Marketing Organisation, or by using the user-diagnostics disk supplied with the P2500 Systems Reference Manual for Release 1.2.

2 Ensure that the hard disk is switched off. Run CONFIG and, using the commands shown on page 2.5, set up the configuration profile that you wish to install, selecting options for 'PRINTER', 'KEYBOARD', 'SERIAL I/O' and 'DISK' (HD ONLY).

3 Under the 'SYSTEM' column, select option 4 (HD). Accept the configuration by pressing:



A possible error message that may be displayed here is:

```
can't write to hard disk
```

which will occur if your current environment does not support a hard disk.

4 Once the configuration has been accepted, the system will prompt you as follows:

```
switch on hard disk, type space to continue
```

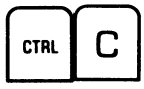
Switch on the hard disk unit and type space. The system will then allow about fifteen seconds for the hard disk to come on-line, and, during this time-out period, will display the following message:

```
waiting for hard disk to come on-line
```

5 If, after the time-out period, this error message appears:

Bdos error on I: Bad Sector

(in which 'I' is the designation assigned to the first hard disk volume, under the current environment), you must press:



to end the program, since there is something wrong with the disk - for example, it may not be properly connected.
If the message:

Bdos error on I: File R/O

appears, it could mean that the disk is not formatted correctly.

6 The system will indicate that the installation process is taking place by displaying this message:

making new system volume

and this will be followed by a return to MBASIC.

4.3.3 Installing the System Onto a 5" Single-sided Disk

1 To install the system onto a second single-sided disk, follow the procedure for installation onto 5" double-sided, noting the following distinction:

2 Under the 'SYSTEM' option, select 2 (5" ss).

5 BACKUP FOR HARD DISKS

5.1. Using BACKUP.COM

The purpose of this utility is to copy hard disk volumes onto 5" single-sided floppy disks, or to restore volumes from these backup disks.
To copy either volume of a 5M byte hard disk requires the capacity of nine single-sided 5" disks. However, 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.

To call the program under BASIC type:

```
RUN "BACKUP"
```

The first screen displayed by the program will look like this:

```
          HARD DISK BACKUP PROGRAM

        1 = COPY VOLUME TO BACKUP
        2 = RESTORE VOLUME FROM BACKUP

        0 = EXIT TO SYSTEM


    SELECT :

    ENTER NUMBER OF BACKUP DRIVES (1 OR 2)
```

Enter 1, 2 or 0 to indicate whether you wish to copy, restore or exit.
(It is not necessary to press return after any entry in connection with this program).

If you enter 1 or 2 you will be prompted to enter the date on which the backup (or restoration) is being made:

ENTER DATE :

The date entry may be in any form up to eight characters long.

The system will then prompt for further information:

ENTER NUMBER OF BACKUP DRIVES (1 OR 2)

Enter 1 or 2 to indicate whether you have a single disk drive or two drives connected. The second screen will then be displayed, and will depend on whether you are copying or restoring the volume, as described below and on the following pages.

5.1.1 To Copy Volume to Backup

If you have selected 1 (to copy) the following screen will be displayed:

HARD DISK BACKUP PROGRAM

COPY VOLUME TO BACKUP

1 = VOLUME I TO BACKUP
2 = VOLUME J TO BACKUP
0 = RETURN TO MAIN MENU

SELECT:

5.1.2 To Restore Volume From Backup

If you have selected 2 (to restore a volume) the screen that will be displayed will be as shown below:

```
                HARD DISK BACKUP PROGRAM

RESTORE VOLUME FROM BACKUP

          1 = LOWER VOLUME FROM BACKUP
          2 = UPPER VOLUME FROM BACKUP
SELECT :
```

The procedure for restoring a volume is the same as for copying with respect to the entries that you will have to make. Therefore the following instructions apply equally to both functions.

5.1.3 Transfer Procedure

You must specify the logical volume that you wish to transfer. '1' is the upper volume and '2' the lower.
Enter either 1 or 2 and this line will appear on the screen:

INSERT BACKUP DISK 1 IN THE LEFT DRIVE

If you have more than one drive available for backup a second line will be displayed below the first:

INSERT BACKUP DISK 2 IN THE RIGHT DRIVE

The program will then prompt for an indication to begin transferring the volume:

TYPE SPACE IF READY, ESCAPE TO ABORT

The program will transfer the contents of the volume until the first disk is full. It will then prompt you to insert a second disk, if you are using a single drive, and when the second disk is full it will prompt for a third, and so on, until the volume has been copied in its entirety.

For example:

INSERT BACKUP DISK 2 IN THE LEFT DRIVE
or INSERT BACKUP DISK 3 IN THE LEFT DRIVE

If you are using two drives, you may change the disk in one drive while the other is in use. In this case, the transfer procedure will continue without stopping for additional prompts:

For example:

COPYING FROM BACKUP DISK 3 IN THE LEFT DRIVE

will change to: COPYING FROM BACKUP DISK 4 IN THE RIGHT DRIVE

and so on.

There are a number of help or warning messages that you may encounter during the operation of the BACKUP program. Some of them are described below:

Message	Indicates:
LATEST BACKUP, USE ANOTHER	That you have a disk from the most recent backup series for that volume in the drive when you type space.
INVALID BACKUP DISK	That there is a disk that has not been serialised for use with that volume.
DISK IN LEFT DRIVE IS NOT THE LATEST BACKUP	This warning message may occur at the beginning of the process. However, you are not prevented from using the disk.
WRONG BACKUP DISK NUMBER	This indicates that the disk is from a set belonging to an upper volume, which is being used for a lower volume, or vice-versa.

When the hard disk volume has been successfully transferred, and all nine disks have been processed, the screen prompts will be replaced by the following message:

COPY(RESTORE) COMPLETE

SPACE TO RETURN TO THE MAIN MENU, ESCAPE TO EXIT

A SYSTEM ERRORS

There are four types of error which may occur when you are using the BASIC Interpreter Development System. They are described in the following sections of this appendix.

A.1 Disk Errors

The format of a disk error message is as follows:

BDOS ERR ON ⟨drive name⟩ : ⟨error⟩

where

⟨drive name⟩ is the name of the drive on which the error occurred.

⟨error⟩ is one of the following error messages:

BAD SECTOR — This indicates that the disk may be physically damaged, that the disk controller may be defective, or that the disk has not been correctly inserted. Open the drive flap and check to see if the disk is positioned correctly, and that the disk is of the correct format. This is a fatal error and the data that has been changed before the occurrence of the error and after the last back-up was made, will probably have been lost. To escape from the error, type a carriage return to ignore the sector (this will probably destroy some of your data), or type CTRL/C to reboot the system (this will erase the contents of the memory).

SELECT — This error will occur if you address an invalid drive name. Type CTRL/C and the system will reboot. The contents of the memory will be erased.

READ ONLY — This error will occur if you did not program a RESET after inserting a new disk in one of your drive units, or if a write protect tab is on the disk. Press the reset button and the system will reboot. The contents of the memory will be erased.

Note - Because of the possible occurrence of the above errors, take care of your disks, follow the instructions on the back of the disk cover. Use the recommended back-up procedures (see Appendix B) as often as possible.

A.2 Printer Error

If you try to access the printer when it is not ready for use, the following error message will occur:

CHECK PRINTER

The printer is not ready for use when it is not turned on, when there is no paper, or when the ribbon is out. If, having prepared the printer for use, you type a carriage return, the system will re-execute the specified procedure. If you do not have a printer, press the space bar. From then on, the printer will be ignored every time you wish to print, and to enable printing, you must reset the system.

A.3 Initialization Error

If you attempt to initialize the system with the wrong SESAM Key, the following error message will occur,

INIT ERROR

and the system will not boot. Insert the SESAM Key with which the system was first initialized, and then restart the system.

B GUIDELINES FOR DISK HANDLING

This appendix provides guidelines for the handling of disks and the procedures to be used for making disk back-ups. We recommended that you read this appendix in order to minimize disk handling problems.

The appendix is divided up into four sections, disk handling, general information, the back-up procedure, and using the back-up procedure to handle errors.

B.1 Disk Handling

Disks are made of flexible plastic with a sensitive magnetic surface. Do not remove the disk casing or touch any open magnetized surfaces.

A disk should always be put back into its cover after it has been removed from a drive unit. Store it in a place free from magnetic disturbances (note: do not lay a disk on the P 2500 for this reason). It is recommended that you use a disk box for storage purposes.

Temperature tolerance: 10° C - 52° C
(50° F - 125° F)

Humidity: 20% - 80% (no condensation)

Only disks delivered by Philips or an authorized Philips dealer can be used; others could damage the drive unit and the guarantee will be forfeited. If write errors occur during the first use, restart the procedure (check for write protection labels on the destination disk, incorrect insertion).

Remember that a disk should only be inserted into a running drive unit. If the write procedure is still unsuccessful after retrying, the exact configuration and conditions should be stated in the reclamation.

B.2 General Information

- We recommend that you keep a computer logbook (see attachment).
- Disks should be inserted only after turning on the computer, and should also be removed before turning it off.
- The drive flap should only be closed when the drive unit is running (motor is on), so as to ensure alignment of the disks and drive unit.
- Before the computer is turned off, make sure you have completed your program correctly. If not, data may be destroyed.
- After the end of a program has been prompted, disks should be removed from the drives and returned to their covers. The machine can then be turned off.
- A back-up should be made of every disk containing data, which had been altered during a work session. This is the only way you will be able to correct errors which might occur during a later session.
- Correct use of the COMPUTER LOGBOOK will enable you to record not only which programs and disks were in use, but also information on abnormal occurrences and back-up procedures.
- Error detection can only be supported if a correct and exact logbook is available (liable for all costs involved).

B.3 The Back-Up Procedure

The following is known as the minimal back-up procedure. If you are using files which involve a very long processing procedure, we recommend making an extra (second generation) set, or even a periodical back-up (third generation).

There should be at least two generations (at different processing levels) for each data disk. These two generations should be marked with differently named or coloured labels.

B.3.1 Back-Up Procedure

The purpose of backing-up disks is to protect you from losing all your work if a disk error occurs. Every disk you work with should be copied after it has been updated, in order to ensure this protection. As an added form of security, a third disk should be used in the back-up procedure, giving you double protection.

When you first copy your main disk (known as the work disk), simply copy it to the second disk. When you next update your work disk, this time copy it to the third disk. If any mistakes occur during this copy, you will still have the second disk left intact.

From then on, whenever you make a back-up of an updated work disk, copy it to the disk which has the oldest copy; thus if there are any errors in that copy, you will still have a more up-to-date copy to work from. An example of this procedure is given in the table on the next page.

The back-up procedure should only be done with an authorized COPY DISK procedure (to be found in the VOLORG program). The WORK disk (Source) should always be inserted in drive unit 1 and the destination (COPY or Generation 2) disk in drive unit 2.

Example of minimal back-up procedure:

RED (R)=WORK disk BLUE (B)=SAVE disk YELLOW(Y)=COPY disk

				STATUS	ACTION	CONTINUE
1	START	R	B	RED and BLUE identical		
2	PROGRAM			RED changed by program BLUE old level	Copy	3
3	COPY DISK	R	Y	Run OK	Copy	4
				Target destroyed	Exchange YELLOW	3
				Source destroyed	Copy	6
4	COPY DISK	R	B	Run OK	Ready for next session	1
				Target destroyed	Exchange BLUE	4
				Source destroyed	Exchange RED	5
5	COPY DISK	Y	R	Run OK	Copy	4
				Target destroyed	Exchange RED	5
				Source destroyed	Copy	6
6	COPY DISK	B	R	Run OK	Setback and reenter all data since last backup	
				Target destroyed	Exchange RED	6
				Source destroyed	Start from first session again	

Exchange means that a new Disk has to be used.

B.4 Using the Back-Up Procedure to Handle Errors

Abnormal program terminations are to be noted in the "COMPUTER LOGBOOK". If the reason is also known, it should be stated.

If an abnormal termination occurs, please follow the procedure described in the example in the previous section.

Never use back-up disks directly in any program session. After locating and solving a hardware or software problem, the responsible technician and/or programmer will execute a test session (involving a test disk) to check if the problem has been solved.

COMPUTER LOGBOOK

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Manual Comment Form

Manual Title: P2206 BASIC RUN-TIME SYSTEM

12NC: 5103 992 20622

Including updates(s) Release 2.1 week 337 (15/09/83)

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