



**MS<sup>TM</sup> - DOS**  
**Version 2.11**  
**Using the Hard Disk**

**digital equipment corporation**

**First Printing, October 1984**

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# Preface

## Welcome to the Rainbow Winchester Disk Option

We congratulate you on the purchase of the Rainbow personal computer and the Rainbow Winchester disk option. The Rainbow Winchester disk is a hard disk that you install in your personal computer.

The hard disk provides space for 10 million characters (about 3,750 pages). You can store data from 25 or more diskettes on the hard disk.

## Intended Reader

This guide is intended for Rainbow computer users who have purchased the Rainbow Winchester disk option and plan to use it with the MS-DOS operating system. The purpose of this guide is to provide you with detailed information about how to use the hard disk.

This guide assumes that you have:

1. Installed the Rainbow computer according to the instructions in the *Rainbow Installation Guide*.
2. Installed and tested the Rainbow Winchester disk according to the instructions in the *Rainbow Winchester Disk Option Installation Guide*.
3. Read the *Rainbow MS-DOS Version 2.11 Getting Started*.

## Guide Organization

The *Rainbow MS-DOS Version 2.11 Using the Hard Disk* manual is organized as follows:

Chapter 1	Introduces the hard disk and describes its uses.
Chapter 2	Discusses how to add an MS-DOS part (called "partition") to the hard disk.
Chapter 3	Discusses the four ways of starting the MS-DOS operating system from the hard disk.
Chapter 4	Tells you how you can correct hard disk problems.
Chapter 5	Discusses how you can change the arrangement of the internal storage areas on the hard disk.
Appendix A	Lists the international DIGITAL Help Line telephone numbers.

## Conventions Used

Follow the conventions listed below while using this guide.

- In examples of dialog between you and the computer, what the computer displays on the screen is shown in black. The characters you type from the keyboard are shown in color.
- You can type these characters in either lower- or uppercase characters. Use the Shift or Lock key on the keyboard to enable uppercase characters.

### **IMPORTANT**

The Lock key does not enable you to type the numeric and special symbol keys. For example, if you want to type \$, %, \*, (, :, ? you must use the Shift key. The Lock key only affects the alphabetic characters.

- Make sure to type all spaces and punctuation marks exactly as they are printed.
- When you see **Return**, press the Return key on the keyboard.
- When you see **Ctrl/C**, hold down the control key. While you are still holding the Ctrl key, press the C key and then release both keys.
- The optional portions of a command syntax are enclosed in a pair of square brackets ([ ]).
- Braces ({ }) indicate that you have a choice between two or more entries. You must select at least one unless the entries are optional.



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## Hard Disk Uses

### What is the Hard Disk

The hard disk (called a Winchester disk) can be added onto the Rainbow computer. This disk enables you to store large files or many small files, and access the files very rapidly.

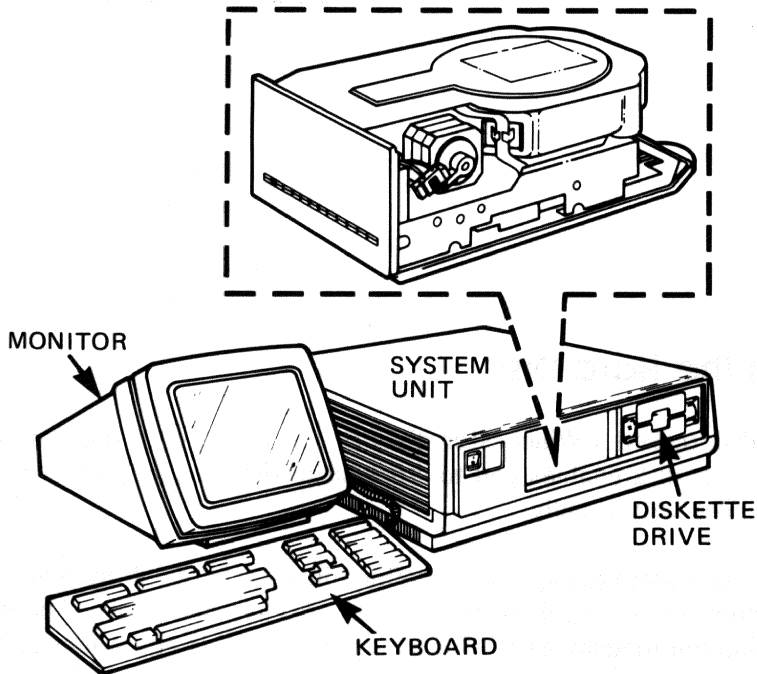
The hard disk's storage capacity is defined in megabytes. A byte is equal to one character, and a megabyte is equal to a million characters. The hard disk contains ten megabytes of storage space, which is equivalent to 25 times the storage capacity of a single diskette.

In terms of type-written pages, a diskette stores about 150 pages of text; the 10-megabyte hard disk stores about 3750 pages; the 5-megabyte hard disk stores about 1875 pages.

The disk can simulate up to four diskette drives, each with a much larger capacity than a single diskette.

Because of its speed and large working capacity, you may want to use the hard disk to store the programs and files you use daily, and use diskettes for storing less-used files. If you are using an application program, we recommend that you store it on the hard disk and store data files on diskettes.

Figure 1-1 shows where the hard disk fits into the Rainbow computer.



MR-11156

**Figure 1-1. The Hard Disk and the Rainbow Computer**

For a description of installation procedures, refer to the *Rainbow Winchester Disk Option Installation Guide*.

## **What You Can Do with the Hard Disk**

You can use the hard disk to:

- Store application programs or data files.
- Automatically start your operating system from the hard disk by simply turning on the power switch if you have a Rainbow 100B or Rainbow 100+ computer.

For detailed instructions on how to accomplish the above tasks and for more information on the hard disk, read the remaining chapters in this manual.





# 2

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## Setting Up the Hard Disk

Before you can use the hard disk with the MS-DOS operating system, you must have:

1. Installed the Rainbow computer according to the instructions in the *Rainbow Installation Guide*.
2. Installed and tested the hard disk according to the directions in the *Rainbow Winchester Disk Option Installation Guide*.

To set up the hard disk to use it with the MS-DOS operating system, read the rest of this chapter.

### Using the Hard Disk with the MS-DOS Operating System

When you used the Winchester Utility Program to test and initialize (prepare) the hard disk, it was automatically divided into two CP/M-86/80 parts of equal size. That is, it was set up for use with the CP/M-86/80 operating system.

You must now set it up to use with the MS-DOS operating system by:

1. Setting aside an MS-DOS part on the hard disk

This step sets aside an area of the hard disk for the MS-DOS operating system so you can read and write MS-DOS files to the hard disk. This is called "partitioning" the hard disk.

2. Preparing and copying the MS-DOS operating system files to the MS-DOS part

This step prepares the MS-DOS part of the hard disk that you set aside and then copies the operating system files to that part.

### A Hard Disk Partition

This section tells you about the internal storage areas that the hard disk is divided into. Each of these areas or "parts" are called **partitions**.

A hard disk can be divided into two, three or four internal storage areas, each with a much larger capacity than a single diskette. Each of these internal storage areas is called a hard disk partition. You can divide (or partition) the internal storage areas to use the space in a way that best fits your needs. For example, if you are using more than one operating system, you may need to have one five-megabyte partition for one operating system, and two 2.5 megabyte partitions for the other operating system.

#### NOTE

If you have a disk with a five megabyte storage capacity, the partition sizes are different.

The Winchester Utility Program Version 2.0 allows you to divide (or partition) your hard disk in any one of the following arrangements:

1. Two or four partitions of the CP/M-86/80 operating system only.
2. Two or four partitions of the MS-DOS operating system only.
3. One or two partitions for the CP/M-86/80 operating system, plus one or two partitions for the MS-DOS operating system.

To use the hard disk with the MS-DOS operating system, you must set aside at least one MS-DOS partition.

### Setting Aside an MS-DOS Partition

This section tells you how to set aside a partition(s) for the MS-DOS operating system. To do this you will:

- Start the Winchester Utility Program Version 2.0
- Choose option 2 to re-partition the hard disk
- Choose which partition arrangement you want to divide your hard disk into
- Choose the size of the partitions depending on which arrangement you choose

#### NOTE

Changing the partitions destroys **ALL** existing data on **ALL** hard disk partitions. Therefore, if you are currently storing files on the hard disk, be sure to copy all files on all partitions that you want to save before changing the partition arrangement. The *Rainbow MS-DOS Version 2.11 User's Guide* explains how to copy files from the hard disk.

**Starting the Winchester Utility Program.** To start the Winchester Utility Program Version 2.0:

1. Turn on the Rainbow computer, if you haven't done so already.
2. Find the Winchester Utility Program Version 2.0 diskette contained in this kit. Insert the diskette into drive A.

#### IMPORTANT

You should use the Winchester Utility Program diskette contained in this kit, rather than any other Winchester Utility Program diskette that you may already have.

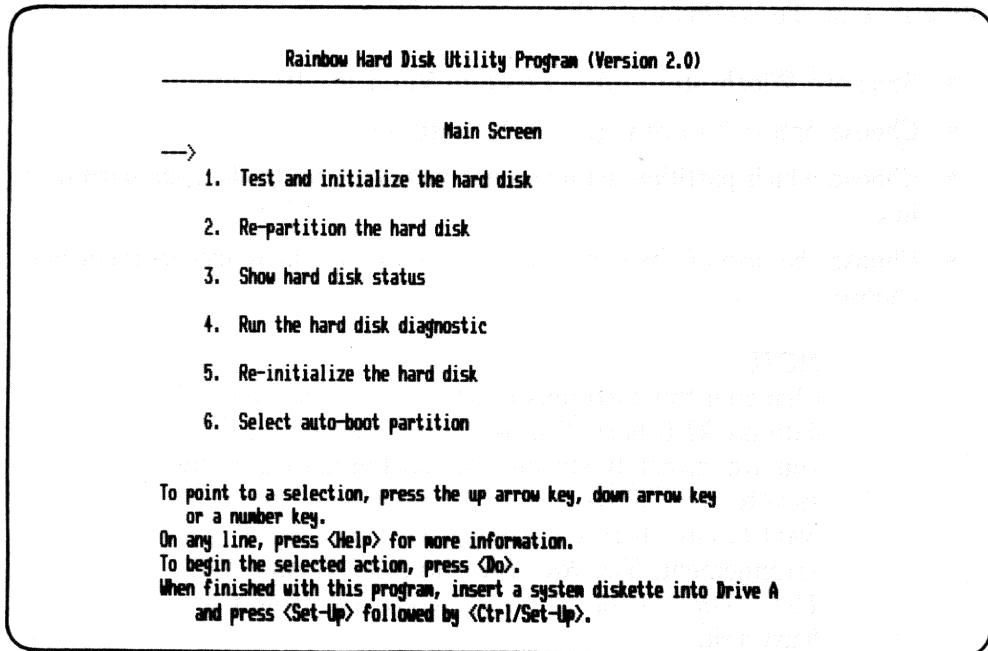
## Setting Up the Hard Disk

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3. In response to the Rainbow computer's Main System Menu, type:

A

The computer displays the Winchester Utility Program's Main Screen.



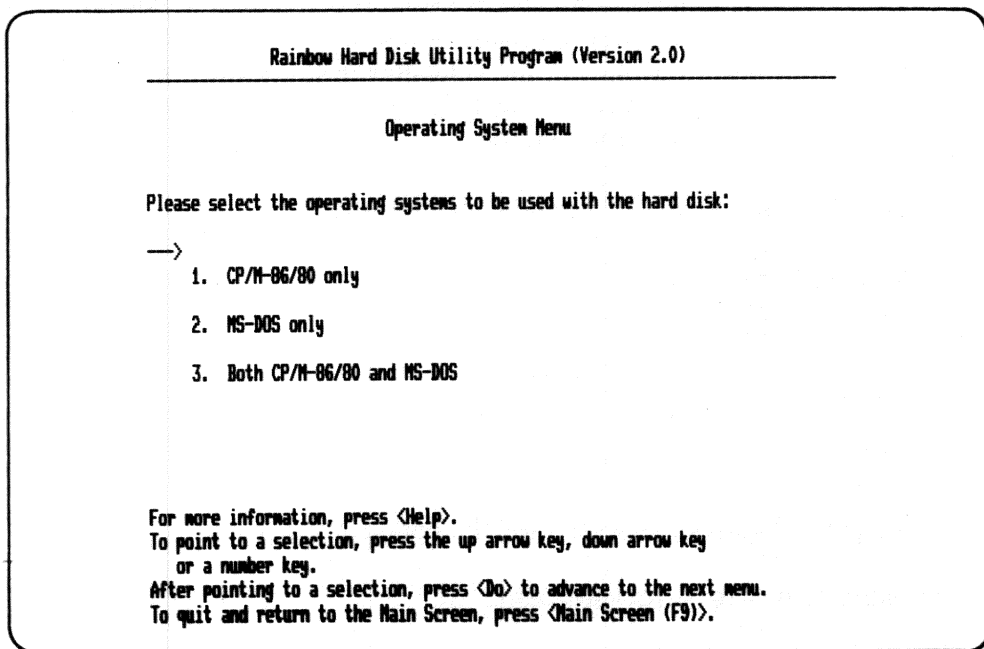
Screen 2-1. Winchester Utility Program's Main Screen

### Choosing the "Re-Partition" Option.

1. Press one of the following to select option 2:
  - The up or down arrow keys until the arrow points to option 2
  - The 2 key
2. Press:

**Do**

The computer displays the Operating System Menu shown in Screen 2-2.



Screen 2-2. Winchester Disk Utility Program Operating System Menu

### Choosing Your Partition Arrangement.

1. To set aside an MS-DOS partition(s) you must select either option 2 or option 3 shown in Screen 2-2. Choose option 2 or option 3 depending on your plans for the hard disk as described below:

Option 2	Select this option if you plan to use ONLY the MS-DOS operating system with the hard disk. If you select this option, the computer displays the MS-DOS Partition Menu, which asks you to select the partition arrangement.
----------	--

- Option 3      Select this option if you plan to use BOTH the MS-DOS and CP/M-86/80 operating systems with the hard disk. The available space is divided equally between the two operating systems. If you select this option, the computer displays two menus, which ask you to select the number of partitions for each operating system.

2. To select an option, press one of the following:

- The 2 key
- The 3 key

3. Press:

**Do**

The computer displays the screen for the option you selected.

### Choosing the Size Arrangement.

1. After you have chosen the partition arrangement, you must now select the number of partitions from the menu.
2. To begin the re-partitioning process, press:

**Do**

The computer displays the following warning twice:

**WARNING: ALL DATA ON THE HARD DISK WILL BE DESTROYED**

3. To continue, press:

**Resume**

The program displays:

**Re-partitioning is in progress.**

4. When the program is finished, it displays:
  - A message that the partitioning is complete
  - The new partition arrangement
5. To leave the Winchester Utility Program and return to the Rainbow computer's Main System Menu, press:

**Set-Up**

**Ctrl/Set-Up**

## Preparing the MS-DOS Partition and Copying the Operating System

Before you can use the partition with the operating system, you must first prepare the partition and copy the operating system files onto the hard disk. To do this, use the **FORMAT** command. This command:

- Sets up the partition for the MS-DOS files that allow you to start the operating system from the hard disk.
- Copies some files so you can start the operating system from the new partition.

To prepare the MS-DOS partition and copy the operating system to it, follow the steps below:

1. Insert the MS-DOS operating system diskette into drive A.
2. In response to the Rainbow computer's Main System Menu, press:  
  
A
3. Enter the date and the time.

4. When MS-DOS displays the A> prompt, type:

A> FORMAT E: /S Return

When the FORMAT program is complete, the computer displays the operating system prompt, A>.

5. To return to the Rainbow computer's Main System Menu, press:

Set-Up Ctrl/Set-Up

## What to Do Next

Now the partition is ready to use with the MS-DOS operating system. You can now:

- Use the COPY command to copy the remainder of the MS-DOS programs to the hard disk partition. See the *Rainbow MS-DOS Version 2.11 User's Guide* for instructions on how to use the COPY command.
- Copy or install application files on the hard disk partition. To copy files, see the COPY command in the *Rainbow MS-DOS Version 2.11 User's Guide*. To install an application on the hard disk partition, see the appropriate manual for the application.
- Start the operating system from the hard disk by pressing a series of keys, (manual start), if you have a Rainbow 100B or Rainbow 100+ computer. See Chapter 3 of this book.
- Set up the hard disk partition so you can automatically start the operating system from it, if you have a Rainbow 100B or Rainbow 100+ computer. See Chapter 3 of this book.



# 3

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## Starting MS-DOS From the Hard Disk

You can start the MS-DOS operating system from the hard disk in several ways. This chapter describes these ways and helps you decide which method is best for you.

Before you can choose a method to start the operating system, you must have:

1. Installed the hard disk according to the instructions in the *Rainbow Winchester Disk Option Installation Guide*.
2. Tested the hard disk according to the instructions in the *Rainbow Winchester Disk Option Installation Guide*.
3. Set aside at least one MS-DOS partition and copied the MS-DOS operating system to it according to the instructions in Chapter 2 of this book.

## Manual Start Versus Automatic Start

You can start the MS-DOS operating system from the hard disk either:

- Manually
- Automatically

**Manually** means that you have to select the drive and the partition every time you start the operating system; that is, you must press a key to select a drive and a hard disk partition.

**Automatically** means that you can set the computer to select the drive and/or partition; that is, you **do not** have to press any keys.

### NOTE

If the W option is not displayed on your Rainbow computer's Main System Menu, you cannot start the operating system from the hard disk. You can, however, use the hard disk to store and work with files.

## Manually Starting MS-DOS from the Hard Disk

You must first set up the computer to manually start the MS-DOS operating system from the hard disk. To do this:

1. With the Rainbow computer's Main System Menu displayed, enter the Set-Up program by pressing:

**Set-Up**

The computer displays the main Set-Up screen.

2. Press:

**Prev Screen**

The computer displays Set-Up's "AUTO-BOOT" screen shown in Screen 3-1.

**NOTE**

"AUTO-BOOT" is the name of the option that allows you to choose a specific drive to start the operating system from. If you choose a letter (A, B, C, D, W), the computer goes to that drive every time you turn on the computer. If you choose ? (question mark), the computer displays the Rainbow Main System Menu when you turn on the computer.

**SET-UP**

TO EXIT PRESS "SET-UP"

PRESS "HELP"

TO RESET TYPE <CTRL/SET-UP>

05.03A

640K

LINE

AUTO-BOOT

0=DRIVE

Screen 3-1. AUTO-BOOT Set-Up Screen

## Starting MS-DOS From the Hard Disk

---

3. Press the up arrow key until the computer displays:

?=DRIVE

### NOTE

If the computer already displays the ?, you can skip step 4.

4. To save the change you have made to the Set-Up program, press:

**Shift/S**

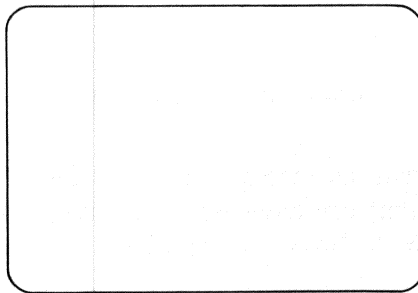
5. To leave the Set-Up program, press:

**Set-Up**

The computer displays the Rainbow computer's Main System Menu.

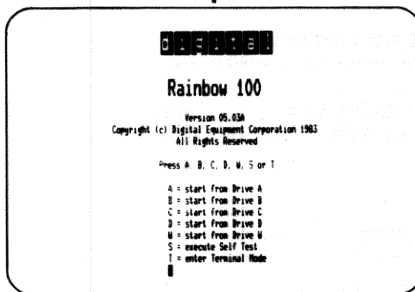
The next time you use the Rainbow computer, you can start the MS-DOS operating system manually from the hard disk. (That is, you must type keys on the keyboard to indicate the drive and partition.)

## Starting MS-DOS From the Hard Disk



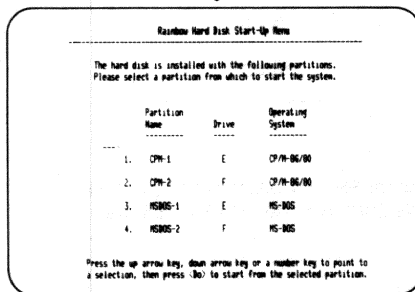
Turn on the  
Rainbow computer.

+



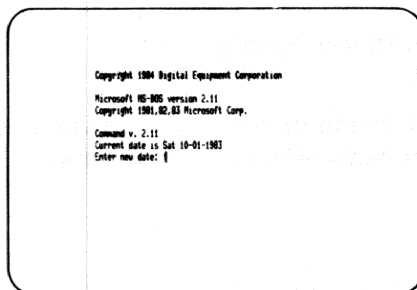
Press the W key  
to select the  
Winchester drive.

+



Press the number  
of the partition that  
you want to start  
the operating system from.

=



The MS-DOS operating  
system is ready to use.

Figure 3-1. Manually Starting the Operating System from the Hard Disk

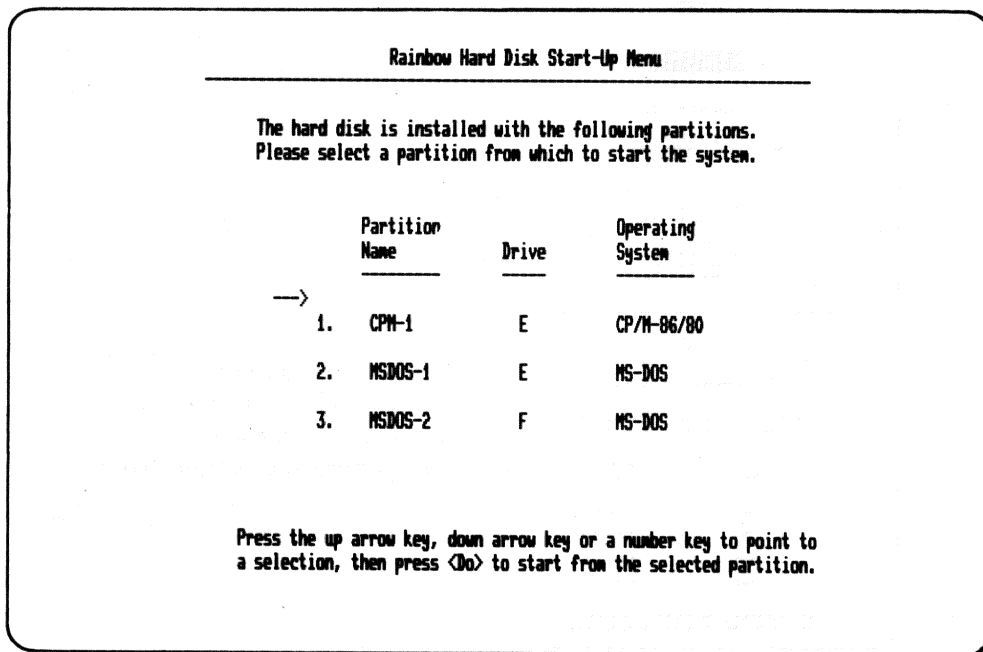
## Starting MS-DOS From the Hard Disk

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To do this:

1. Turn on the computer, and press W when you see the Rainbow computer's Main System Menu.

The computer displays a screen with choices of partitions. The choices depend on the partition arrangement you have selected. Screen 3-2 displays an example of a screen with choices of partitions.



Screen 3-2. A Partition Arrangement

2. Select the MS-DOS partition that you prepared in the previous section by pressing the up or down arrow keys until the arrow points to the partition. Then press:

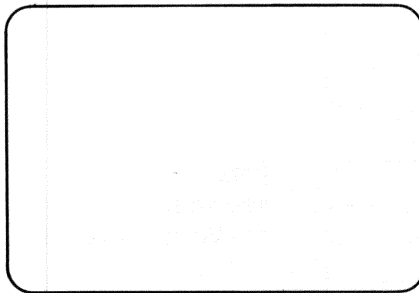
**Do**

The computer then starts the MS-DOS operating system.

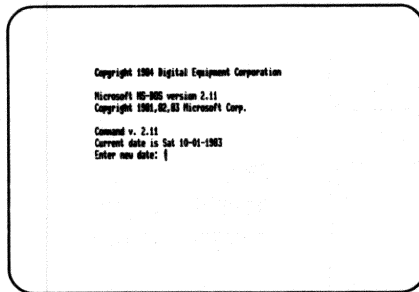
## Automatically Starting MS-DOS from the Hard Disk

When you automatically start the operating system from the hard disk, you can choose the drive, the partition, or neither. There are three different ways to automatically start the operating system from the hard disk. You can:

1. Turn on the computer and the computer automatically starts the operating system. This means that you do not have to press any keys.



Turn on the Rainbow computer.



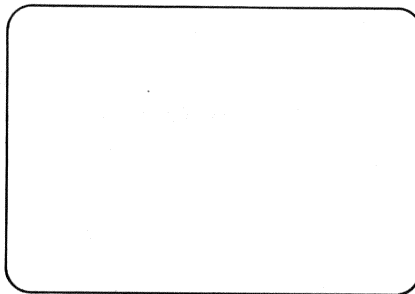
The MS-DOS operating system is ready to use.

**Figure 3-2. The Computer Chooses the Drive and the Partition**

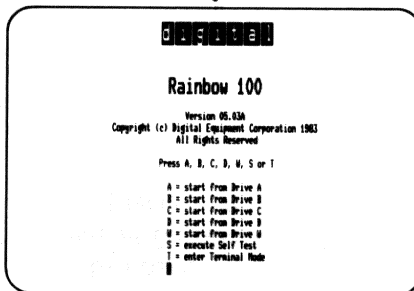
Select this way if you always want to start one operating system from one partition on the hard disk. With this way, every time you turn on the computer, the operating system starts from a specific partition on the hard disk.

## Starting MS-DOS From the Hard Disk

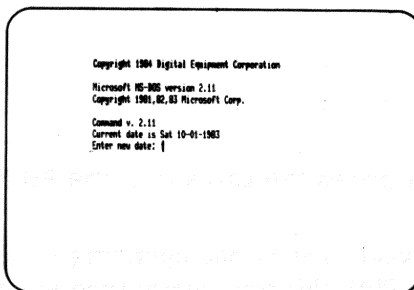
2. Turn on the computer, select W for the hard disk and then the computer automatically starts the operating system. This means that you only have to press the W key when you see the Rainbow computer's Main System Menu. You do not have to press a key to select a partition.



+



=



Turn on  
the Rainbow computer.

Press the W  
key to select  
the Winchester drive.

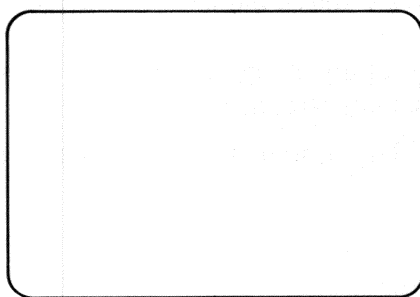
The MS-DOS  
operating system  
is ready to use.

Figure 3-3. You Only Choose the Drive

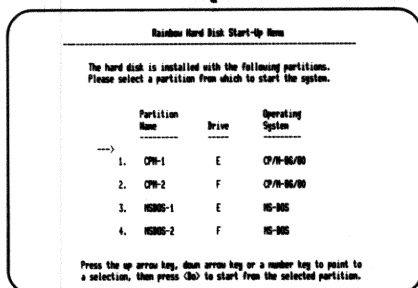


Select this way if you always want to start the operating system from a specific partition when you start from the hard disk. This way allows you to choose a drive to start the operating system from. Every time you choose drive W, the operating system starts from a specified partition.

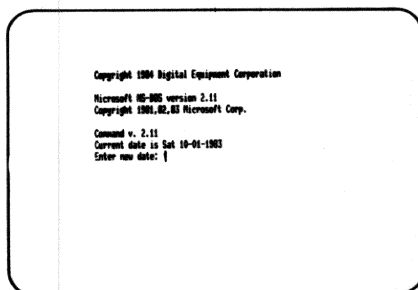
3. Turn on the computer and the computer automatically selects W for the hard disk. You select a hard disk partition and then the operating system starts. This means that you only have to press the key to specify the partition and the Do key.



Turn on  
the Rainbow computer.



Press the number  
of the partition that  
you want to start the  
operating system from.



The MS-DOS operating  
system is ready to  
use.

**Figure 3-4. You Only Choose the Partition**

- Select this way if you always want to start the operating system from the hard disk, but not from one specific partition. With this way, the computer automatically chooses drive W. You can then choose which partition to start the operating system from.

### **The Computer Chooses the Drive and the Partition**

To set up the computer so you only have to turn on the Rainbow computer and your operating system automatically starts without pressing any keys:

1. Locate the Rainbow Winchester Utility Program Version 2.0 diskette that comes in this kit. Insert this diskette into drive A.
2. From the Rainbow computer's Main System Menu that is displayed, press:

A

Screen 3-3 shows the Winchester Utility Program's Main Screen.

### Rainbow Hard Disk Utility Program (Version 2.0)

#### Main Screen



1. Test and initialize the hard disk
2. Re-partition the hard disk
3. Show hard disk status
4. Run the hard disk diagnostic
5. Re-initialize the hard disk
6. Select auto-boot partition

To point to a selection, press the up arrow key, down arrow key or a number key.

On any line, press <Help> for more information.

To begin the selected action, press <Do>.

When finished with this program, insert a system diskette into Drive A and press <Set-Up> followed by <Ctrl/Set-Up>.

### Screen 3-3. Winchester Utility Program's Main Screen

3. From the Winchester Utility Program's Main Screen, choose *Option 6: Select auto-boot partition* by pressing one of the following:
  - The down arrow key
  - The 6 key
4. Press:

**Do**

5. You must then choose the partition from which you want the operating system to start the next time you turn on the computer. The choices depend on the partition arrangement you have selected.

Choose the partition by:

- Pointing to it with the up or down arrow key
- Pressing the Do key

After you make a selection, the asterisk (\*) moves to that selection.

6. Press:

**Set-Up** **Ctrl/Set-Up**

The computer displays the Rainbow computer's Main System Menu.

7. When you see the Main System Menu, press:

**Set-Up**

8. Press:

**Prev Screen**

The computer displays Set-Up's "AUTO-BOOT" screen shown in Screen 3-4.

### NOTE

"AUTO-BOOT" is the name of the option that allows you to choose a specific drive to start the operating system from. If you choose a letter (A, B, C, D, W), the computer goes to that drive every time you turn on the computer. If you choose ? (question mark), the computer displays the Rainbow Main System Menu when you turn on the computer.

## SET-UP

TO EXIT PRESS "SET-UP"

PRESS "HELP"

TO RESET TYPE <CTRL/SET-UP>

05.03A

640K

LINE

AUTO-BOOT

W=DRIVE

Screen 3-4. AUTO-BOOT Set-Up Screen

9. Press the up arrow key until the computer displays:

W=DRIVE

### NOTE

If the computer already displays the W, you can skip Step 10.

10. To save the change you have made to the Set-Up program, press:

**Shift/S**

11. To leave the Set-Up program, press:

**Set-Up**

The computer displays the Rainbow computer's Main System Menu.

The next time you turn on the computer, the operating system automatically starts from the specified partition on the hard disk. You do not have to press any keys.

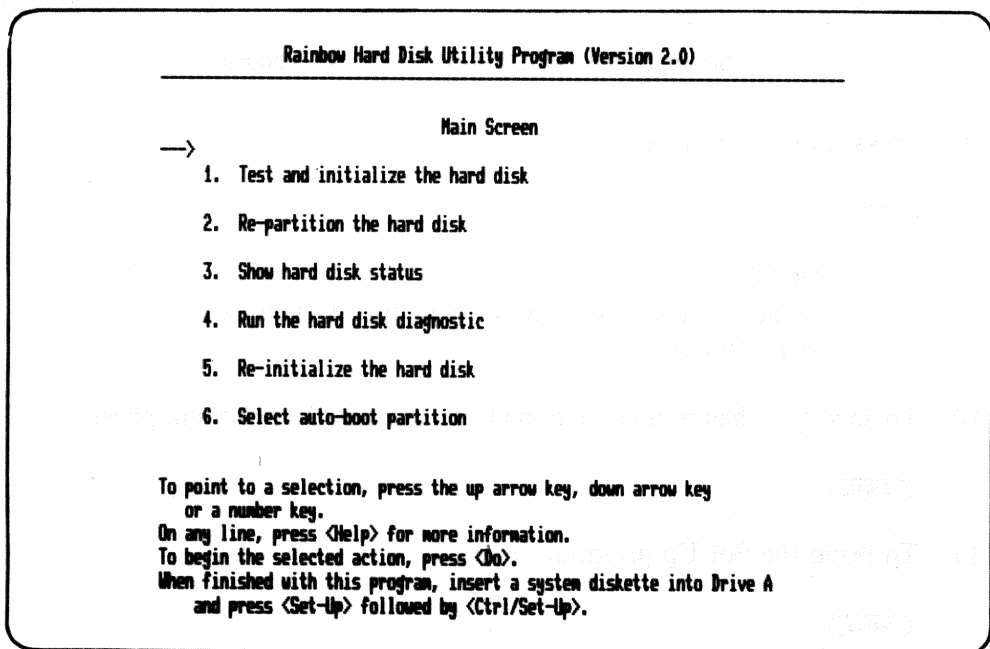
### You Only Choose the Drive

To set up the computer so you only have to turn on the computer and choose the drive to automatically start the operating system:

1. Locate the Rainbow Winchester Utility Program Version 2.0 diskette that comes in this kit. Insert this diskette into drive A.
2. From the Rainbow computer's Main System Menu that is displayed, press:

A

Screen 3-5 shows the Winchester Utility Program's Main Screen.



Screen 3-5. Winchester Utility Program's Main Screen

3. From the Winchester Utility Program's Main Screen, choose *Option 6: Select auto-boot partition* by pressing one of the following:

- The down arrow key six times until the arrow points to option 6
- The 6 key

4. Press:

**Do**

5. You must then choose the partition from which you want the operating system to start the next time you turn on the computer. The choices depend on the partition arrangement you have selected.

Choose the partition by:

- Pointing to it with the up or down arrow key
- Pressing the Do key

After you make a selection, the asterisk (\*) moves to that selection.

6. Press:

**Set-Up**

**Ctrl/Set-Up**

The computer displays the Rainbow computer's Main System Menu.

The next time you turn on the computer you need only select drive W when you see the Rainbow computer's Main System Menu. The computer then automatically starts the operating system from the partition you selected in the above instructions.

### You Only Choose the Partition

To set up the computer so you only have to turn on the computer and choose the hard disk partition to automatically start the operating system:

1. With the Rainbow computer's Main System Menu displayed on the screen, press:

**Set-Up**

2. Press:

**Prev Screen**

The computer displays Set-Up's "AUTO-BOOT" screen shown in screen 3-6.

#### NOTE

"AUTO-BOOT" is the name of the option that allows you to choose a specific drive to start the operating system from. If you choose a letter (A, B, C, D, W), the computer goes to that drive every time you turn on the computer. If you choose ? (question mark), the computer displays the Rainbow Main System Menu when you turn on the computer.



**SET-UP**

TO EXIT PRESS "SET-UP"

PRESS "HELP"

TO RESET TYPE <CTRL/SET-UP>

05.03A

384K

W-D

AUTO-BOOT

W-D

**Screen 3-6. AUTO-BOOT Set-Up Screen**

3. Press the up arrow key until the computer displays:

W-D

**NOTE**

If the computer already displays the W, you can skip Step 4.

4. To save the change you have made to the Set-Up program, press:

**Shift/S**

5. To leave the Set-up program and return to the Rainbow computer's Main System Menu, press:

**Set-Up**

## Starting MS-DOS From the Hard Disk

---

The next time you turn on the computer, it automatically displays the hard disk partitions. You can then select a hard disk partition from which to start the operating system.

# 4

---

## Correcting Winchester Disk Problems

This chapter describes problems you might encounter while using the Winchester Disk Utility Program. The first part of the chapter lists the Winchester Disk messages in alphabetic order. The second part of the chapter discusses option 4 and option 5 of the Winchester Utility Program. You can use these options to correct some Winchester Disk problems.

### Winchester Disk Messages

When you are using the Winchester Utility Program, problems can arise while you are initializing, testing, or setting the auto-boot partition.

If a problem arises, the Winchester Utility Program can display any of the following messages:

**ERROR IN PARTITION drv:  
Initialization data could not be written.**

The operating system requires certain data to be written to the first two sectors of the partition. This message can occur if some of that data could not be written for any reason. The specified partition is unusable.

## Correcting Winchester Disk Problems

---

Press the Resume key to advance to other partitions; others are still usable.

To make the partition usable again, you must return to the Winchester Utility Program's Main Screen and select option 4 to run the hard disk diagnostic. The diagnostic is a test that checks for problems. If a bad sector (portion of the hard disk) is found, the program displays the following message when the test is complete:

```
n NEW BAD SECTORS DETECTED
SELECT THE RE-INITIALIZE OPTION
```

You should copy the files on ALL hard disk partitions to back-up diskettes, if you haven't already. Then use the Winchester Utility Program option 5 to re-initialize the hard disk. After the hard disk is re-initialized, you can re-partition and restore the files to the hard disk. You should then be able to use the partition that contained the bad sector again.

**ERROR IN PARTITION drv:**  
**Insufficient number of alternate sectors.**

This message can occur while running the Winchester Utility Program if there were not enough alternate sectors available to assign to the bad sectors within the partition. The specified partition is unusable.

Press the Resume key to advance to other partitions; others are still usable.

If you have three or less partitions on the hard disk, you can re-partition to try to make the bad sectors of the hard disk occupy a smaller partition. For example, if you have two MS-DOS partitions, one of which displays this message, you can try to re-partition the hard disk into four MS-DOS partitions. The bad sector may only ruin one of the four partitions and you can use the three remaining partitions.

**ERROR IN PARTITION drv:  
Directory area could not be initialized.**

The directory area on the partition could not be initialized with the data required by the MS-DOS operating system. The specified partition is unusable.

Press the Resume key to advance to other partitions; others are still usable.

To make the partition usable again, you must return to the Winchester Utility Program's Main Screen and select option 4 to run the hard disk diagnostic. The diagnostic is a test that checks for problems. If a bad sector (portion of the hard disk) is found, the program displays the following message when the test is complete:

n NEW BAD SECTORS DETECTED  
SELECT THE RE-INITIALIZE OPTION

You should copy the files on ALL hard disk partitions to back-up diskettes, if you haven't already. Then use the Winchester Utility Program option 5 to re-initialize the hard disk. After the hard disk is re-initialized, you can re-partition and restore the files to the hard disk. You should then be able to use the partition that contained the bad sector again.

**FATAL ERROR  
Hard disk does not respond.**

This message can occur if the hard disk did not indicate that it had completed a procedure.

Return to the Winchester Utility Program's Main Screen and run option 4, the diagnostic test to obtain more information about the failure.

**FATAL ERROR  
Hardware failure detected during testing.**

This message can occur during the initialization procedure of your hard disk when either the disk controller board or the drive is faulty.

Refer to the *Rainbow Winchester Disk Option Installation Guide* for more information about installing the hard disk.

Return to the Winchester Utility Program's Main Screen and run option 4, the hard disk diagnostic to obtain more information about the failure.

### **FATAL ERROR**

**Initialization data could not be read back from hard disk.**

This message can occur while using the hard disk if the utility program cannot read back some of the data that it previously wrote onto the hard disk.

Return to the Winchester Utility Program's Main Screen and run option 4, the hard disk diagnostic to obtain more information about the failure.

### **FATAL ERROR**

**Initialization data could not be written on hard disk.**

This message can occur while using the hard disk if the utility program was not able to write some of the data that the operating system needs to read at a later time.

Return to the Winchester Utility Program's Main Screen and run option 4, the hard disk diagnostic to obtain more information about the failure.

### **FATAL ERROR**

**No hard disk diagnostic program.**

This message can occur when the file DEX16UTL.CMD is not found on the Winchester Utility Program diskette provided with the hard disk.

Make a new copy of the Winchester Utility Program diskette from the master copy.

### **FATAL ERROR**

**No pre-boot program.**

This message is rare, but can occur if the file containing the pre-boot program could not be found on the utility diskette.

Make a new copy of the Winchester Utility Program diskette from the master copy.

**FATAL ERROR**  
**No secondary boot program.**

This message is rare, but can occur if the file containing the secondary boot program could not be found on the utility diskette.

Make a new copy of the Winchester Utility Program diskette from the master copy.

**FATAL ERROR**  
**Programming error occurred.**

This message is very rare but can occur if the Winchester Utility Program detects a problem with the program code.

If this message is displayed, report the problem to the DIGITAL Help Line. For the phone number of the office nearest you, look on the bottom of your keyboard or refer to Appendix A of this guide.

**FATAL ERROR**  
**Secondary boot program is too big.**

This message is rare, but can occur if the secondary boot program does not fit into the allocated space on the hard disk. This can only occur if the file was somehow overwritten or changed.

Make a new copy of the Winchester Utility Program diskette from the master copy.

**Hard disk option is not connected.**

This message can occur if the Winchester Utility Program did not find the hard disk controller board.

Refer to the *Rainbow Winchester Disk Option Installation Guide* for more information about the hard disk controller board.

Recheck the connections of the controller board and try the procedure again.

## Solving Winchester Disk Problems

The Winchester Utility Program has two options that you can use when you encounter some of the messages described earlier in this chapter. The options are:

- Option 4. Run the hard disk diagnostic
- Option 5. Re-initialize the hard disk

### NOTE

See the description of the message in the preceding section to determine if you can use these options with the message displayed on your screen.

These options are explained in the following sections.

### Option 4: Run the hard disk diagnostic

The hard disk diagnostic is a program that “tests” your hard disk to see if it has any problems.

You should use the hard disk diagnostic (option 4) if you encounter problems while:

- Initializing the hard disk
- Partitioning the hard disk
- Setting the auto-boot partition

To use the hard disk diagnostics:

1. Find the Winchester Utility Program Version 2.0 diskette in this kit. Insert this diskette into drive A.
2. Turn on the Rainbow computer. From the Main System Menu, type:

A

Screen 4-1 displays the Winchester Utility Program’s Main Screen.



### Rainbow Hard Disk Utility Program (Version 2.0)

#### Main Screen

→

1. Test and initialize the hard disk
2. Re-partition the hard disk
3. Show hard disk status
4. Run the hard disk diagnostic
5. Re-initialize the hard disk
6. Select auto-boot partition

To point to a selection, press the up arrow key, down arrow key or a number key.

On any line, press <Help> for more information.

To begin the selected action, press <Do>.

When finished with this program, insert a system diskette into Drive A and press <Set-Up> followed by <Ctrl/Set-Up>.

#### Screen 4-1. Winchester Utility Program's Main Screen

3. Choose option 4, run the hard disk diagnostic by pressing one of the following:

- The down arrow key four times until the arrow points to option 4
- The 4 key

4. Then press:

**Do**

Option 4 displays detailed messages as it runs eight subtests. As each subtest runs, the program displays either:

**PASSED**

or

**FAILED**

5. If the hard disk diagnostic finishes, Screen 4-2 displays:

```

Rainbow Hard Disk Utility Program (Version 2.0)
-----
HARD DISK OPTION DIAGNOSTIC      REV 2.1
=====
                                PASS 0000
SUBTEST #7:  READ ALL SECTORS      PASSED
              WRITE SECTORS TEST
              IMPLIED SEEK(WRITE)  PASSED
              BASIC WRITE TEST 1   PASSED
              BASIC WRITE TEST 2   PASSED
              BASIC WRITE TEST 3   PASSED
SUBTEST #8:  WRITE FORMAT TESTS    PASSED

***  DIAGNOSTIC COMPLETE  ***

PRESS <RETURN> TO RETURN TO MAIN MENU
=====
```

Screen 4-2. End of a Successful Diagnostic Test

The bottom of the screen could also display:

```
n NEW BAD SECTORS DETECTED
SELECT THE RE-INITIALIZE OPTION
```

If the bottom of the screen displays this message, you should press the Return key to return to the Winchester Utility Program's Main Screen. You should copy the files on ALL hard disk partitions to back-up diskettes, if you haven't already. Then, use the Winchester Utility Program option 5 to re-initialize the hard disk.

If the bottom of the screen does not display this message, you can use your hard disk. To leave the hard disk diagnostics, press the Return key. Then press:

**Set-Up**   **Ctrl/Set-Up**

6. If the hard disk diagnostic does not finish, the hard disk has failed a subtest. If the hard disk fails a subtest, you should report the problem to the DIGITAL Help Line. For the phone number of the office nearest you, look at the bottom of your keyboard or refer to Appendix A of this guide.

### **Option 5: Re-initialize the hard disk**

You should re-initialize the hard disk (option 5) if the hard disk diagnostic found new bad sectors. Re-initializing the hard disk is like starting again with a new disk. If any information is currently stored on the disk, it will be erased.

To re-initialize the hard disk, follow the steps below to start the Winchester Utility Program, if you haven't already.

1. Find the Winchester Utility Program Version 2.0 diskette in this kit. Insert this diskette into drive A.
2. Turn on the Rainbow computer. From the Rainbow computer's Main System Menu, press:

A

Screen 4-3 displays the Winchester Utility Program's Main Screen.

### Rainbow Hard Disk Utility Program (Version 2.0)

---

#### Main Screen

→

1. Test and initialize the hard disk
2. Re-partition the hard disk
3. Show hard disk status
4. Run the hard disk diagnostic
5. Re-initialize the hard disk
6. Select auto-boot partition

To point to a selection, press the up arrow key, down arrow key or a number key.

On any line, press <Help> for more information.

To begin the selected action, press <Do>.

When finished with this program, insert a system diskette into Drive A and press <Set-Up> followed by <Ctrl/Set-Up>.

### Screen 4-3. Winchester Utility Program's Main Screen

3. Choose option 5, re-initialize the hard disk, by pressing one of the following:
  - The up or down arrow key until the arrow points to option 5
  - The 5 key
4. Then, press:

**Do**

The program displays two messages to warn you that all data on the hard disk will be destroyed.

5. To start the re-initialize procedure, press:

**Resume**

Screen 4-4 is displayed when the re-initialization is complete.

### Rainbow Hard Disk Utility Program (Version 2.0)

Re-initialization is completed.

The hard disk is re-initialized with the following partitions:

Partition Name	Drive	Operating System	Size
CPM-1	E	CP/M-86/80	4.898MB
CPM-2	F	CP/M-86/80	4.898MB

To perform additional actions, press <Main Screen (F9)> to return to the Main Screen.

If finished with this program, insert a system diskette into Drive A and press <Set-Up> followed by <Ctrl/Set-Up>.

### Screen 4-4. Complete Initialization Procedure

The hard disk is now set up with two CP/M-86/80 partitions. If you want to change the partition arrangement, see Chapter 5 of this guide. Otherwise, you can start using the hard disk.



---

## The Hard Disk Arrangement

This chapter tells you how to change the arrangement of your hard disk, (called re-partitioning). You may want to do this at a later time, when another partition arrangement may better fit your needs. For example, if you have only one operating system on your hard disk and you want to add another, you must re-partition the hard disk.

### Changing the Partition Arrangement on the Hard Disk

To change the arrangement (or re-partition) the hard disk:

1. Turn on the Rainbow computer.

#### **CAUTION**

Changing the partition arrangement destroys any existing data on the hard disk. Therefore, if you have files stored on the disk, be sure to copy all files on all partitions that you want to save to a back-up diskette save before making a change.

## The Hard Disk Arrangement

---

2. Find the Winchester Utility Program Version 2.0 diskette in this kit. Insert the diskette into drive A.
3. When you see the Rainbow computer's Main System Menu, type:

A

The Winchester Utility Program's Main Screen is then displayed. (See Screen 5-1.)

### Rainbow Hard Disk Utility Program (Version 2.0)

---

#### Main Screen

—>

1. Test and initialize the hard disk
2. Re-partition the hard disk
3. Show hard disk status
4. Run the hard disk diagnostic
5. Re-initialize the hard disk
6. Select auto-boot partition

To point to a selection, press the up arrow key, down arrow key or a number key.

On any line, press <Help> for more information.

To begin the selected action, press <Do>.

When finished with this program, insert a system diskette into Drive A and press <Set-Up> followed by <Ctrl/Set-Up>.

**Screen 5-1. Winchester Utility Program's Main Screen**



### NOTE

If you are not sure what your current hard disk partition arrangement is, you can select Option 3: Show hard disk status. Then return to the Winchester Utility Program's Main Screen.

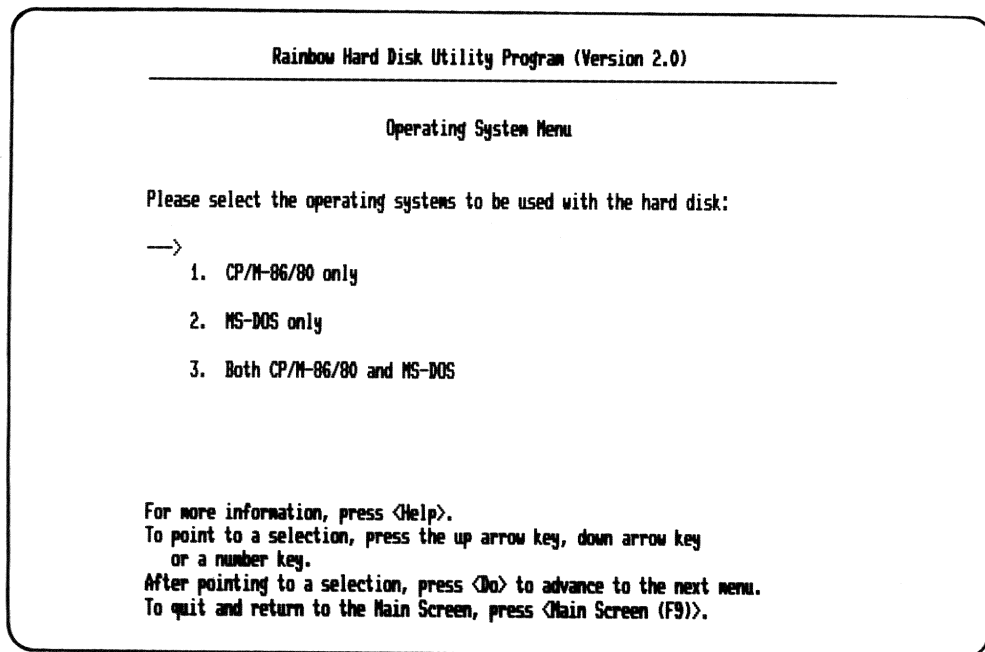
4. Choose Option 2: Re-partition the hard disk, by pressing one of the following:
  - The up or down arrow key until the arrow points to option 2
  - The number 2
5. Press:

**Do**

After you choose option 2, you are given a choice of which operating system(s) you want to use. (See Screen 5-2.)

### NOTE

This example will divide the space on the hard disk equally between the MS-DOS operating system and the CP/M-86/80 operating system.



Screen 5-2. Operating System Menu

6. To choose the CP/M-86/80 operating system and the MS-DOS operating system, press one of the following:
  - The down arrow key three times until the arrow points to option 3
  - The 3 key
7. Then, press:

**Do**

The computer displays the CP/M-86/80 and MS-DOS Partition Menu.  
(See Screen 5-3.)

### Rainbow Hard Disk Utility Program (Version 2.0)

#### CP/M-86/80 & MS-DOS Partition Menu (Part 1)

Please select one of the following partition plans for the CP/M-86/80 half of the hard disk:

—>

1. One partition: 5 MBytes,
2. Two partitions: 2.5 MBytes each

For more information, press <Help>.

To point to a selection, press the up arrow key, down arrow key or a number key.

After pointing to a selection, press <Do> to advance to the next menu.

To quit and return to the previous menu, press <Prev Screen>.

To quit and return to the Main Screen, press <Main Screen (F9)>.

#### Screen 5-3. CP/M-86/80 & MS-DOS Partition Menu (Part 1)

##### NOTE

If you have a disk with five megabytes instead of ten, the partition sizes shown on the screen are different.

To choose the arrangement for the CP/M-86/80 operating system, press one of the following:

- The down arrow key
- The 1 or 2 key

8. Then press:

**Do**

The second partition menu is then displayed. (See Screen 5-4.)

### Rainbow Hard Disk Utility Program (Version 2.0)

---

#### CP/M-86/80 & MS-DOS Partition Menu (Part 2)

Please select one of the following partition plans for the MS-DOS half of the hard disk:

—>

1. One partition: 5 MBytes,
2. Two partitions: 2.5 MBytes each

For more information, press <Help>.

To point to a selection, press the up arrow key, down arrow key or a number key.

After pointing to a selection, press <Do> to begin re-partitioning.

To quit and return to the previous menu, press <Prev Screen>.

To quit and return to the Main Screen, press <Main Screen (F9)>.

#### Screen 5-4. CP/M-86/80 & MS-DOS Partition Menu (Part 2)

To choose the arrangement for the MS-DOS operating system, press one of the following:

- The down arrow key
- The 1 or 2 key

9. Then, press:

**Do**

10. After you press the Do key, two messages are displayed:

**WARNING: ALL DATA ON THE HARD DISK WILL BE DESTROYED**

11. To begin the re-partitioning procedure, press:

**Resume**

The program displays:

**Re-partitioning is in progress**

12. When the program is finished, it displays:

- A message that the partitioning is complete
- The new partition arrangement

See screen 5-5.

### Rainbow Hard Disk Utility Program (Version 2.0)

Re-partitioning is completed.

The hard disk now has the following partitions:

Partition Name	Drive	Operating System	Size
CPM-1	E	CP/M-86/80	4.89GB
MSDOS-1	E	MS-DOS	2.44GB
MSDOS-2	F	MS-DOS	2.44GB

To perform additional actions, press <Main Screen (F9)> to return to the Main Screen.

If finished with this program, insert a system diskette into Drive A and press <Set-Up> followed by <Ctrl/Set-Up>.

Screen 5-5. Re-partitioned Disk Status

### **NOTE**

If you have a disk with five megabytes instead of ten, the partition sizes shown on the screen are different.

13. To leave the Winchester Utility Program, press:

**Set-Up**   **Ctrl/Set-Up**

The computer displays the Rainbow computer's Main System Menu.

---

## Appendix





# A

## Getting Help

### Help Line Phone Numbers

Country	Phone Number
U.S.A.	(800) DEC-8000
Canada	(800) 267-5251
United Kingdom	(0256) 59 200
Belgium	(02)-24 26 790
West Germany	(089) 95 91 66 44
Italy	(02)-617 53 81 or 617 53 82
Japan	(0424) 64-3302
Denmark	(04)-30 10 05
Spain	(1)-73 34 307
Finland	(90)-42 33 32
Holland	(1820)-31 100
Switzerland	(01)-810 51 21
Sweden	(08)-98 88 35
Norway	(02)-25 64 22
France	(1)-687 31 52
Austria	(222)-67 76 41 extension 444
Australia	
Sydney	(02) 412-5555
All other areas	(008) 226377



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### READER'S COMMENTS

Did you find this manual understandable, usable, and well-organized? Please make suggestions for improvement.

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Did you find errors in this manual? If so, specify the error and the page number.

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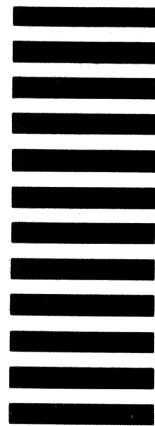
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