VICTOR

Hard Disk Tool Kit

Hard Disk Utility Manual

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CONTENTS

PREFACE TO THE HARD DISK UTILITY MANUAL

This manual describes how to use the hard disk operator utilities AUTOSET, VDIR, and ARCHIVE. Before you use these utilities, read the Operator Reference Guide to familiarize yourself with basic operation of the hard disk.

The hard disk operator utilities allow you to:

- Prepare the hard disk for use according to a preset configuration.
- View drive assignment information.
- Back up and restore hard disk files.

The last chapter in this guide describes the error messages that are displayed by the utilities.

1. THE AUTOSET UTILITY

The AUTOSET utility lets you prepare the hard disk for use quickly and easily. AUTOSET divides the hard disk into volumes according to a preset configuration that you choose.

AUTOSET has five standard volume configurations for you to choose from. You can also use a nonstandard configuration that has been recorded in a file created with HDSETUP. The Hard Disk Maintenance Manual describes how to create a customized configuration file with HDSETUP.

1.1 AN OVERVIEW OF AUTOSET

Each of the standard configurations provided with AUTOSET has a specific use. For example, one divides the hard disk into two volumes, a configuration appropriate for use with a single application that creates large files. Each standard configuration is recorded in a configuration file. These files tell AUTOSET how many volumes to create, how large each volume should be, and which drive letters to assign to each volumes.

After you load AUTOSET, the utility describes the standard configurations and tells you the file name for each configuration. AUTOSET then asks you to choose a configuration by typing its file name. After you type the file name, AUTOSET prepares the hard disk according to the configuration you've chosen.

If you already know the name of the configuration you want, you can type the name when you load AUTOSET (see Section 1.2). AUTOSET then prepares the hard disk without displaying information about the available configurations.

1.2 HOW TO USE AUTOSET

Follow these steps to use AUTOSET:

1) Load AUTOSET by typing:

   autoset(cr)

2) If you know the name of the configuration you want, you can also load AUTOSET by typing:

   autoset filename(cr)

where "filename" is the name of the configuration. (You don't need to type the configuration file extension). You can type the name of an AUTOSET configuration file or the name of a configuration file created with HDSETUP.

3) When loaded, AUTOSET displays its sign-on message:

   AUTOMATIC SETUP UTILITY v1.Ø

4) Next, AUTOSET initializes the hard disk. Initialization prepares the hard disk for setup, but also destroys data. If your hard disk has previously been set up with AUTOSET (or HDSETUP), AUTOSET warns you with the message:

   Your hard disk is already initialized.
   All of the current data will be destroyed if this program continues.
   Do you want to back up your data? (y/n)

   a) If you want to back up the data, type "y". If not, type "n" to continue the program. AUTOSET checks again by asking:

      Are you sure you want to reininitialize the disk? (y/n)

   b) Type "y" to continue the program (any other character ends the program).

5) If you typed a file name when loading AUTOSET, the utility sets up the hard disk according to your chosen configuration.

6) If you did not type a file name, AUTOSET displays information about the standard configurations:

   a) One screen of information is displayed about each configuration. At the bottom of each screen, AUTOSET tells you:

      Hit any key to continue.

   b) Press any key to view the next screen.

   c) When you have viewed information about each configuration, AUTCSET lists the names of the configuration files and asks you to pick one:

      Please enter the file name of your choice.

   d) If you know which configuration you want, type its file name. If you are still not sure, type an ALT-C to end AUTOSET and return to MS-DOS.

7) When AUTOSET is finished setting up the hard disk, it tells you:

   Press any key to reboot your system.

8) Press any key to reload the DOS (from your system diskette). You can then use the new configuration.

After you use AUTOSET, use SYSCOPY to transfer a copy of the DOS onto the hard disk. You can then load the DOS directly from the hard disk. SYSCOPY is described in the Operator Reference Guide.

1.3 THE STANDARD AUTOSET CONFIGURATIONS

This section describes the standard configurations available with AUTOSET. Each configurations is listed by its file name. Specifications for that configuration appear at the beginning of the description. These specifications also appear in the information AUTOSET shows about each configuration.

The specifications for each configuration show:

- The number of volumes created.
- The capacity of each volume in Kbytes (1K = 1024 bytes).
- The number of files you can store under each volume's directory.
- The allocation unit (AU) size. (This information is used by programmers.)
- The amount of DOS memory used by each volume. The total amount of DOS memory required for the configuration is also shown at the bottom of the specification information.

The drive letter assignments are shown to the right. AUTOSET assigns a drive letter to each volume and floppy disk drive. The drive letter is used in the drive designation for files on the volume or floppy drive. The floppy disk drive assignments are labeled "floppy."

The volume used to load the DOS is labeled "boot." After using AUTOSET, transfer the DOS onto the boot volume with SYSCOPY.

1.3.1 5AND5.CFG CONFIGURATION

Specifications				
Capac	Dir	Au	Mem Req	A: 5m (boot)
5000K	352	4k	2048b	B: Floppy
5000+k	352	4k	2048b	C: 5+m

Total Memory Requirements with double-sided floppy-5k = 5120b

This configuration is appropriate if you use two applications only. You can assign one volume to each application. The configuration handles large or small files easily and efficiently.

This configuration is not appropriate if you use many applications.

1.3.2 2AND3.CFG CONFIGURATION

Specifications				
Capac	Dir	Au	Mem Req	A: 2m (boot)
2000K	256	4k	1024b	B: Floppy
3000+k	512	4k	3584b	C: 8+m

Total Memory Requirements with double-sided floppy-4.5k=4608b

This configuration is appropriate if you use a single program that creates large files - such as an accounting spread sheet application. You can use the smaller volume for the application and the larger volume for data storage.

Don't use this configuration if you use many applications. The large data volume does not let you group many small files logically.

1.3.3 1AND3X3.CFG CONFIGURATION

Specifications				
Capac	Dir	Au	Mem Req	A: 1m (boot)
1000K	192	2K	1024b	B: Floppy
3000K	352	4K	1536b	C: 3m
3000K	352	4K	1536b	D: 3m
3000+K	352	4K	1536b	E: 3+m

Total Memory Requirements with double-sided floppy - 6.5K = 6656b

This configuration is appropriate if you use up to three applications. It is well suited for storing small files and can handle a moderate number of large files. Very small files (less than 2K bytes) should be stored on the drive A volume (the boot volume) because of the small AU size on volume A.

A disadvantage of this configuration is that it uses a large amount of DOS memory. Memory sensitive applications may have problems.

1.3.4 5X2.CFG CONFIGURATION

Specifications				
Capac	Dir	Au	Mem Req	
2000K	256	2K	1536b	
2000K	256	2K	1536b	
2000K	256	2K	1536b	
2000K	256	4K	1024b	
2000+K	256	4K	1024b	

A:	2m (boot)
B:	Floppy
C:	2m
D:	2m
E:	2m
F:	2+m

Total Memory Requirements with double-sided floppy - 7.5K = 7680b

This is a good general purpose configuration. Small files are efficiently stored on the first three volumes because of the volumes' small AU size. Larger files should be stored on the two remaining volumes. This configuration is your best choice if you use a word processor to create memo-size files.

A disadvantage of this configuration is that it uses a large amount of DOS memory. However, this should not be a problem if you work primarily with small files.

1.3.5 2AND8X1.CFG CONFIGURATION

Specifications				
Capac	Dir	Au	Mem Req	
2000K	256	4K	1024b	
1000K	240	2K	1024b	
1000K	240	2K	1024b	
1000K	240	2K	1024b	
1000K	240	2K	1024b	
1000K	240	2K	1024b	
1000K	240	2K	1024b	
1000K	240	2K	1024b	
1000+K	240	2K	1024b	

A:	2m (boot)
B:	Floppy
C:	1m
D:	1m
E:	1m
F:	1m
G:	1m
H:	1m
I:	1m
J:	1+m

Total Memory Requirements with double-sided floppy - 10K = 10240b

This configuration is designed for the programmer. It lets you store a variety of files on different volumes. This promotes good file organization.

2. THE VDIR UTILITY

The VDIR utility displays information about the drive assignments on your computer. VDIR lists information about each volume or floppy disk drive assigned to a drive letter.

Before you use VDIR, check that your floppy disk drive(s) contain MS-DOS diskette(s). If you use an external hard disk, check that its power is on. Otherwise, VDIR cannot list drive information for the drive letters assigned to the floppy drives or the external hard disk. Instead, VDIR displays an MS-DOS error message and the message NO DISK (see the second example below).

VDIR lists the drive information under headings:

- VOLUME NAME lists the volume name. If a floppy disk drive is assigned to the drive letter and the drive contains an MS-DOS diskette, it lists the name FLOPPY.
- VOLUME TYPE lists the DOS used with the volume or the diskette in the floppy disk drive. (Currently, MS-DOS is the only DOS listed.)
- VOLUME CAPACITY lists the capacity of the volume or diskette in the floppy disk drive. The capacity is listed in K bytes (1K equals 1024 bytes).
- VOLUME DIRECTORY ENTRIES lists the number of files you can store under the volume or diskette directory.
- VOLUME ALLOCATION UNIT lists the size of the allocation unit for the volume or diskette.

The following example shows using VDIR for a computer with an internal hard disk containing two volumes. In the example, what you would type is underlined.

```
A>vdir(cr)

VOLUME DIRECTORY UTILITY  V1.0

      VOLUME NAME        TYPE     CAPACITY    DIRECTORY SIZE    AU

A:  VOLUME 1             MS-DOS     2000K          256           4K
B:  FLOPPY               MS-DOS      612K          128           2K
C:  VOLUME 2             MS-DOS     8327K          512           4K

A>
```

The following example shows using VDIR for the same computer when the floppy disk drive is empty:

```
A>vdir(cr)

VOLUME DIRECTORY UTILITY V1.0

Drive= 1, Track= 0, Sector= 0, Error= FA

      VOLUME NAME        TYPE     CAPACITY     DIRECTORY SIZE     AU

A:  VOLUME 1           MS-DOS       2000K           256           4K
B:  NO DISK
C:  VOLUME 2           MS-DOS       8327K           512           4K

A>
```

3. THE ARCHIVE UTILITY

The ARCHIVE utility saves hard disk files by recording them on diskette. ARCHIVE also restores the saved files by copying them from diskette back to the hard disk.

You can save and restore files singly or in groups. Saved files are written to one or more diskettes, depending on the number and size of the files. Large files can be recorded across several diskettes. Restored files are read from diskette to a designated hard disk volume.

3.1 AN OVERVIEW OF ARCHIVE

The two basic ARCHIVE commands are ARCHIVE and RESTORE. With either command, screen prompts take you through each step of the process.

The ARCHIVE command writes the files you specify on diskette(s). These diskettes are called the **Archive Diskette Library**. Each diskette contains an **Archive Directory** that records which files are contained on which diskette or diskettes.

The RESTORE command writes files in the Archive Diskette Library back to a hard disk volume. During a RESTORE, you are prompted to insert specific diskettes from the Archive Diskette Library.

File groups are saved or restored in wild-card groups or by **argument file**. An argument file contains a list of files to be archived; the files are listed one per line. Up to 415 files can be archived in a run.

You can quit the utility at any point by typing **Q(cr)**. If you quit during the middle of an ARCHIVE or RESTORE command (after having completed at least one diskette), you can restart at the place you left off by re-entering the command line.

3.2 SPECIAL NOTATION USED IN THIS CHAPTER

The following sections describe the ARCHIVE commands. Each command description gives you the command format, which tells you how to type the command. The command formats use the following special notation:

o Uppercase words are to be typed exactly as shown. You

can actually type these words in upper- or lowercase, but you must type the exact characters shown.

- Lowercase words indicate command parameters that you supply. For example, "filespec" means that you type a file specifier at that point in the command.

- Square brackets ([]) enclose optional parameters. You do not need to type optional parameters with the command. If you do type these parameters with the command, however, **do not type the brackets.**

3.3 THE ARCHIVE COMMAND

3.3.1 COMMAND FORMAT

The ARCHIVE command format is:

ARCHIVE [&]filespec [SINCE date] [UNDER archivename]
FROM volume TO diskettedrive [DOUBLE](cr)

Where:

&	-	Indicates that filespec is an argument file specifier.
filespec	-	A file specifier - with or without wild-cards - that identifies the files to be archived. If filespec is an argument file specifier, it must contain the drive designation, file name, and file extension;it cannot include wild-cards.
date	-	Only files modified since this date are to be archived. Type the date as mm-dd-yy, dd-mm-yy, mm/dd/yy, or dd/mm/yy. (The date is displayed as mm/dd/yy.) The default date is 1-1-80.
archivename	-	The name assigned to the archive library. The default is the current date plus the extension .ARC - for example, 1/20/83.ARC.
volume	-	The letter name (A - P) of the hard disk volume from which the files are to be archived.
diskettedrive	-	The letter name (A - P) of the floppy disk drive to be used.
double	-	Specifies that double-sided diskettes are to be used. The default is for single-sided diskettes.

3.3.2 ARGUMENT FILES

An argument file contains a list of the files you want to archive. Create an argument file by listing the files to be archived, one per line. An argument file can contain up to 415 entries. Each entry must give the file's drive designation, file name, and file extension.

The file specifier for an argument file must contain a drive designation, file name, and file extension.

3.3.3 COMMAND LINE EXAMPLES

The following command line archives all files modified since 9-1-82 from hard disk volume K. The archive library is named SEPT.ARC, and the archived files are written to double-sided diskette(s) in floppy drive B:

archive *.* since 9-1-82 under sept.arc from k to b double(cr)

The next command line uses default values. The & tells you K:FILE.LST is an argument file. The files listed in K:FILE.LST are to be written from volume K to single-sided diskette(s) in floppy drive A. The archive library name is (by default) the current date with the .ARC extension. All files modified since 1-1-80 (the default date) are archived:

archive &k:file.lst from k to a(cr)

3.3.4 COMMAND EXAMPLE

The following example shows how to use ARCHIVE. In the example, what you type is underlined.

Example:

C>archive *.* since 10-01-82 under oct.arc from c to d(cr)

Archive
Version 1.0

Archiving files modified since 10-01-82 under oct.arc on single sided diskettes.

Insert a newly formatted diskette in drive d. Press return when ready. (Q to quit program)<cr>

Writing:

Diskette 1 of 15.

Writing to diskette 1 complete.

Now

```
     1) Remove diskette 1.
     2) Label it:
          oct.arc
          Diskette 1 of 15
          10/05/82

     3) AFFIX A WRITE PROTECT TAG TO THE DISKETTE

You will need 14 additional newly formatted diskettes to
archive the rest of the files.

Do you need to format diskettes? (y/n)y

C>
```

In the preceding example, ARCHIVE:

1) Created the Archive Directory (a list of the files to be archived) and allocated files to the diskettes in the Archive Diskette Library.

2) Transferred the file(s) allocated to diskette 1 onto the first diskette inserted.

3) Written 2 utility files to diskette 1: ARC.DAT and ARC.ALF. ARC.DAT contains the Archive Directory. ARC.ALF contains housekeeping information required by ARCHIVE and RESTORE. These utility files are written to each archive diskette after the diskette is processed.

Diskette 1 - which has been fully processed - can be used to restart the interrupted archive after more diskettes have been formatted.

3.4 THE RESTORE COMMAND

With the RESTORE command, the specified files are recorded from diskette(s) in the specified floppy disk drive onto the specified hard disk volume. The RESTORE command format is:

RESTORE [&]filespec FROM diskettedrive TO volume(cr)

The command parameters are the same as for ARCHIVE.

Any diskette from the Archive Diskette Library can be used to start a RESTORE. The **Restore Directory** (a list of the files to be restored) is constructed from the files on the inserted diskette. A copy of the Restore Directory is saved in a temporary file (ARC.$$$) on the target restore volume.

You must restore files on a volume sufficient to hold the restored files and ARC.$$$. (ARC.$$$ requires 1 to 2 allocation units.)

The following example shows how to use RESTORE. In the example, what you type is underlined.

Example:

```
F>Restore *.* from b to f(cr)

Restore
Version 1.0

Restoring from b to f.

Insert a diskette from the archive library into drive b.
Press return when ready. (Q to quit program)(cr)

Archive Library oct.arc
This diskette is number 7 of 15.
This library contains files of volume c
archived on 10/05/82.

Insert diskette 1 in drive b.
Press return when ready. (Q to quit program)(cr)

Archive Library oct.arc
This diskette is number 1 of 15.

Restoring:

     filename1
     filename2
        .
        .
        .
Restoration of diskette 1 complete.

Insert diskette 2 in drive b.
Press return when ready. (Q to quit program)(cr)

Archive Library oct.arc
This diskette is number 2 of 15.

[and so on....]

Restoring complete.

F>
```

3.5 RESTARTING AN INTERRUPTED ARCHIVE OR RESTORE COMMAND

You can restart an interrupted ARCHIVE or RESTORE run with the following commands:

ARCHIVE TO diskettedrive(cr)

Or:

RESTORE [FROM diskettedrive] TO volume(cr)

You must complete at least one diskette with the original command to restart an interrupted ARCHIVE or RESTORE. If you use a floppy drive other than the original floppy drive, make sure it can handle the capacities of the original command.

When you restart an ARCHIVE or RESTORE command, check that you insert the correct diskette. If you insert the wrong diskette, type a Q to exit the program and retype the restart command line.

The following example shows how to restart an interrupted ARCHIVE command:

Example:

```
C>Archive to d(cr)

Archive
Version 1.Ø

Continuing to d.

Insert the last completed Archive diskette into drive d.
Press return when ready. (Q to quit program)(cr)

Archive Library oct.arc
This diskette is number 1 of 15.
This library contains files of volume c
archived on 1Ø/Ø5/82.

Insert a newly formatted diskette into drive d.
Press return when ready. (Q to quit program)(cr)

Writing:

     Diskette 2 of 15.

Writing to diskette 2 complete.

[...and so on]
```

```
Archiving complete.

C>_
```

The following example shows how to restart a RESTORE command. In the example, RESTORE is interrupted after the second diskette has been processed:

Example:

```
K>Restore *.* from n to k(cr)

Restore
Version 1.0

Restoring from n to k.

Insert a diskette from the archive library into drive n.
Press return when ready. (Q to quit program)(cr)

Archive Library total.arc
This diskette is number 7 of 15.
This library contains files of volume c
archived on 9/11/82.

Insert diskette 1 in drive n.
Press return when ready. (Q to quit program)q

K>Restore to k(cr)

Restore
Version 1.0

Continuing from n to k.

Insert a diskette from the Archive Library oct.arc into drive n.
Press return when ready. (Q to quit program)(cr)

Archive Library oct.arc
This diskette is number 2 of 10.

Insert diskette 1 in drive n.
Press return when ready.  (Q to quit program)(cr)

Archive Library oct.arc
This diskette is number 1 of 10.
[and so on....]

Restoring complete.

K>
```

4. OPERATOR UTILITIES ERROR MESSAGES

4.1 AUTOSET ERROR MESSAGES

Following are the errors you may see while using the AUTOSET utility. The error messages occur before configuration takes place. If these errors do occur, the hard disk is left in the original state.

- **The AUTOSET.HLP file was not found.**

  The AUTOSET help file could not be found on the default drive. (The help file contains the information about the standard configurations that is displayed when you load AUTOSET.) The utility terminates.

- **Unable to close the AUTOSET.HLP file.**

  The help file could not be closed. The utility terminates.

4.2 HARDWARE ERROR MESSAGES

The following error messages may be caused by hardware. Try reloading the operating system.

- **Cannot open the specified file name.**
- **Error reading input file.**
- **Cannot close input file.**

4.3 HARD DISK ERROR MESSAGES

Hard disk errors can also occur. If a hard disk error occurs, you are notified by an error message. If the error persists, try resetting the system by slowly turning the power off and on. If this does not help, contact your dealer to have the hardware and media checked.

Following are the messages you may encounter while using the hard disk:

- **Disk reading error.**
- **Memory error.**
- **Error writing FATS and directory.**

- **Error writing new volume label with assignments.**
- **Error writing new volume label.**
- **Error writing volume label with new assignments.**
- **Error writing newly freed volume label.**
- **Error writing valid drive label.**
- **Error writing drive label backup.**
- **Controller error. Unable to reset hard disk.**

4.4 ARCHIVE ERROR MESSAGES

Following are the error messages you may encounter while using the ARCHIVE utility.

- **Open <filename>, cannot be closed.**

  Check that current diskette is correct. Press Return when ready (Q for emergency exit).

- **Hard disk full; <filename> cannot be written.**

  Start over using a hard disk volume with more space. Program terminates.

- **Volume <X> not available.**

  Program terminates.

- **Volume <X> is available but is empty.**

  Program terminates.

- **<X> is not an available floppy drive.**

  Program terminates.

- **Improper response.**

  Prompt is repeated.

- **Improper syntax for an archive name. Archive names have the same form as file names.**

  Program terminates.

- **Improper syntax for a file name.**

  Program terminates.

- **Improper date syntax. The correct syntax is month/day/year. (mm/dd/yr where yr is the short year form, e.g. "82", not "1982")**

  Program terminates.

- **Temporary restore file not found, must redo from start.**

  Program terminates.

- **Inserted diskette is not newly formatted.**

  Prompt repeats.

- **Diskette is not a completed archive diskette.**

  Prompt repeats.

- **Inserted diskette is not [diskette <N>] of Archive Library <XXXXXX>.**

  Prompt repeats.

- **Inserted diskette is not an archive diskette.**

  Program terminates.

- **Diskette archived under incompatible Archive version <X>. You must restore under version <X> or higher.**

  Program terminates.

- **<filename> already exists on volume <X>. Restore anyway? (y/n)**

- **Drive <X> is not a double sided drive as required by your Archive Disk Library. Redo with a double sided floppy drive.**

  Program terminates.

- **Diskette full. Can not write filename.**

  Reformat this diskette using FORMAT. Also check that you are using double-sided diskettes if you specified double in your command line.

- **System error: Segment wrap around on system read. Program exit is necessary. Suggested recovery : split your current Archive Library into two sections and archive each section separately.**

  Program terminates.

- **Incomplete command line. Expected to find <key word>.**

  Program terminates.

- **Archive Library mis-match!! The archive Library last being restored to volume <X> does not match the Archive Library of the inserted diskette.**

- **Error: File list does not exist on requested volume.**

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CONTENTS

PREFACE TO THE HARD DISK MAINTENANCE MANUAL

This manual describes how to use the hard disk maintenance utilities provided with the Hard Disk Tool Kit. These utilities can alter the contents of the hard disk and should be used with care. The maintenance utilities are briefly described below:

- HDSETUP allows you to specify a hard disk configuration, view existing configuration information, or create a file for use with AUTOSET. AUTOSET is the end-user utility for setting up a new hard disk. AUTOSET is described in the Hard Disk Utility Manual.

- HDFIXUP allows you to identify, log, and replace defective media.

- HDTEST is a hard disk confidence test. Run HDTEST when you first receive the hard disk or when you suspect hardware errors.

- HDFORMAT reformats the hard disk. Run HDFORMAT as a last resort before replacing the hard disk. You can also run HDFORMAT on a newly installed hard disk to correct errors that may have occurred during shipment.

Error messages for each utility are listed in the chapter that describes the utility. The error messages are repeated in Chapter 5, which lists the error messages for all four utilities.

1. HDSETUP

Use HDSETUP to:

- Set up a new hard disk (divide it into volumes and prepare it for use).
- Create new volumes or delete existing volumes on a hard disk that has already been set up.
- View configuration information about existing hard disk volumes.
- Create a file to be used with AUTOSET, the end-user utility for setting up a new hard disk. **When you use HDSETUP to create a file for use with AUTOSET, HDSETUP does not affect existing hard disk volumes.** AUTOSET is described in the Hard Disk Utility Manual.

When you use HDSETUP to create an AUTOSET file, HDSETUP operates exactly as when you use it to set up the hard disk, except that:

- Your keystrokes are stored in a file and do not affect the hard disk.
- Data already stored on the hard disk is not affected.
- The hard disk always appears to be unitialized (whether or not it actually is unitialized). This is because AUTOSET automatically initializes the hard disk.

1.1 HDSETUP OVERVIEW

There are four main steps to setting up a new hard disk:

1) You **initialize** the hard disk to prepare it for setup.

2) You **configure** it to divide it into volumes and define volume characteristics.

3) You **assign** drive letters to the volumes. MS-DOS uses 16 drive letters: A through P. You must assign them in alphabetical order.

4) You **reload** the DOS to activate the new setup.

HDSETUP is menu driven. You choose to initialize the hard disk, configure volumes, or assign drives from the Main

menu. The Main menu is displayed after HDSETUP is loaded.

Once the hard disk is set up, you can work from the Main menu to view volume configuration information, delete existing volumes, create new volumes, or change drive assignments. You do not need to reinitialize the hard disk.

When you add volumes or change drive assignments, **you must reload the DOS to make the changes effective.** You can do this by pressing the reset button. When you delete volumes or create volumes on a newly initialized hard disk, HDSETUP reloads the system automatically.

After you have set up a new hard disk, use SYSCOPY to store a DOS on the **primary boot volume.** You assign the primary boot volume when you assign drives. MS-DOS stores your drive assignments on the primary boot volume. After you store the DOS on the primary boot volume, you can load the DOS directly from the hard disk.

If you have more than one hard disk, the primary boot volume is on the first disk in the data line. The first (or only) disk is disk 0.

1.2 HDSETUP OPERATION

HDSETUP uses the top row of function keys labeled 1 through 7. You choose menu options by pressing the appropriate function key. In this section, the function keys are called F1 through F7. During each step, HDSETUP displays a function key map at the bottom of the screen. The map tells you what each function key does for that step. F6 always acts as a "help" key, and F5 always acts as a "cancel" key. F5 takes you back to the beginning of the step you were working on.

Load HDSETUP by typing:

hdsetup(cr)

To create a file for use with AUTOSET, load HDSETUP by typing:

hdsetup filespec(cr)

where filespec is the name of the file to be used with AUTOSET. AUTOSET assumes the file extension .CFG. If you give another extension, AUTOSET discards it and assigns the .CFG extension.

After you load HDSETUP, the Main menu appears. The Main menu is described in the following section.

1.3 THE MAIN MENU

Table 1-1 describes the Main menu function keys.

Table 1-1: HDSETUP Main Menu Function Keys

KEY NAME	KEY FUNCTION
F1 - ASSIGN	Assign drive letters or view current drive assigments.
F2 - CONFIG	Create or delete volumes or view existing volume configuration information.
F4 - INIT	Initialize the hard disk (prepare it to accept data). **CAUTION: Initialization destroys data already stored on the hard disk.** Use F4 only if: o You have just unpacked the hard disk and connected it to your system. o You have backed up your hard disk files. o You are using HDSETUP to create a file for use with AUTOSET.
F5 - CANCEL	Cancel changes made during current HDSETUP session. You are asked to verify cancellation. Press F1 for "yes" (cancel changes and return to MS-DOS) or F2 for "no" (return to the main menu).
F6 - HELP	Display short description of HDSETUP operation.
F7 - DONE	Complete the changes you have made. HDSETUP checks your drive assignments for validity: o If drive assignments are valid, you are returned to MS-DOS. o If invalid drive assignments are found, you are returned to the main menu. Press F1 (assign) to correct the invalid assignments.
ALT-C - EXIT	Exit from HDSETUP. Use ALT-C if your keyboard configuration is not standard (i.e., the function keys do not operate as described). The keyboard configuration is part of the DOS. You must load a standard version of the operating system to use HDSETUP.

The functions you perform from the Main menu are described in more detail in the following sections.

When you finish using HDSETUP, press F7 in the main menu to log your changes. Then press the reset button to activate the system configuration you have just created. If you delete volumes or initialize your disk, HDSETUP reloads the system automatically.

1.4 HOW TO INITIALIZE THE HARD DISK

You must initialize a new hard disk to prepare it to accept data. You cannot create volumes on a new hard disk until you have initialized it.

Initialization creates one large volume. The capacity of this volume is the total capacity of the hard disk. You can reinitialize a hard disk that contains volumes and data, but the data is lost.

Follow these steps to initialize the hard disk:

1) Press F4 in the main menu.

2) The following message appears:

   THIS OPERATION WILL DESTROY THE DISK CONTENTS.

   Also, a new function-key map and an are-you-sure window appear, allowing you to cancel initialization. You have four choices:

   - F1 - YES: continue initialization.
   - F2 - NO: return to main menu.
   - F5 - CANCEL: return to main menu.
   - F6 - HELP: describe function keys.

2) Press F1 for "yes."

3) A new function key map appears, and HDSETUP asks you to type the number of the hard disk to be initialized. The number Ø is automatically shown in the disk number window:

   - Do not type a number if your hard disk is number Ø (for example, if you have only one hard disk).
   - Type the number of your hard disk if it is not Ø.

4) You now have three function key choices:

   - o F5 - CANCEL: return to main menu.
   - o F6 - HELP: describe function keys.
   - o F7 - INIT: log initialization, return to main menu.

5) Press F7 to log the initialization. You are now ready to configure the hard disk volumes, as described in the following section.

Remember that changes are not stored on disk until you press F7 while in the main menu.

1.5 HOW TO CONFIGURE HARD DISK VOLUMES

Press F2 in the main menu to create or delete hard disk volumes and to assign volume characteristics.

When you press F2, a volume list appears on the left side of the screen. If you have not yet created volumes, only one "free" volume is listed.

The volume list describes these volume characteristics:

- o Disk number.
- o Volume name.
- o Volume type (the DOS available for use with the volume).
- o Volume capacity (in Kbytes; minimum capacity is 20 Kbytes).
- o Directory entries (the number of files that can be stored on the volume).
- o Size of the allocation unit (AU) for the volume. AUs are described in Section 1.5.3.

When you create a new volume, you first add it to the volume list and then define its characteristics, as described in the following section.

1.5.1 HOW TO CREATE A NEW VOLUME

To create a new volume:

1) Move the cursor to the volume listed as "FREE." If you are setting up a new hard disk, the cursor already marks the free volume. Use the up-arrow and down-arrow keys to move the cursor.

2) The function key map for this step lists four choices:

   - F1 - ADD: adds the "free" volume to the volume list. If the cursor is not on a free volume, HDSETUP shows an error message.

   - F2 - DELETE: use this key to delete a volume (Section 1.5.2). If the cursor is on a free volume, HDSETUP shows an error message.

   - F6 - HELP: describe function keys.

   - F7 - DONE: log changes and return to main menu.

3) Press F1 to add the volume to the volume list:

   - A new function key map appears

   - HDSETUP displays default values for the volume characteristics.

   - A memory requirements window appears on the right. The window shows the amount of memory (in bytes) required by the DOS for the volume as listed.

4) Change the default values you do not wish to keep. If you do not want to change the default values, go to step 5.

   a) The cursor is initially over the volume name. Type a new name to change the name. (The name is for your convenience only.)

   a) To change the capacity or directory value, move the cursor to the capacity or directory field and type the new value.

   b) To change the AU value, move the cursor to the AU field:

      - A list of possible AU sizes appears, and the cursor moves to the list.

      - Move the cursor up or down to the value you choose (see Section 1.5.3). With each AU value, HDSETUP automatically adjusts the value shown for memory requirements.

      - Log the AU value you choose by moving the cursor left or right (out of the AU window).

5) At this point you have three function key choices:

   - o F5 - CANCEL: change volume to FREE, return to previous menu (add a volume).
   - o F6 - HELP: describes function keys.
   - o F7 - CONFIG: log volume characteristics as shown, return to previous menu (add a volume).

6) Press F7 when you are satisfied with the values shown for the volume characteristics.

7) The previous function key map appears. You have three choices:

   - o Move the cursor to the "free" volume and press F1 to add another volume.
   - o Press F2 to delete a volume (see Section 1.5.2).
   - o Press F7 to log your changes and return to the main menu.

When you have finished creating volumes, you are ready to designate the boot volume and assign drives (Section 1.6). Remember that changes are not recorded on disk until you press F7 while in the main menu.

1.5.2 HOW TO DELETE A VOLUME

To delete a volume:

1) Move the cursor to the volume you wish to delete.

2) The function key map for this step lists four choices:

   - o F1 - ADD: adds the "free" volume to the volume list. If the cursor is not on a free volume, HDSETUP shows an error message.
   - o F2 - DELETE: deletes the volume marked by the cursor. If the cursor is on a free volume, HDSETUP shows an error message.
   - o F6 - HELP: describe function keys.
   - o F7 - DONE: log changes and return to main menu.

3) Press F2 to delete the volume.

4) A new function key map appears, and you are asked to verify the deletion:

   - Press F1 to verify the deletion. The volume list reappears; the deleted volume is listed as "free".

   - Press F2 or F5 to return to the volume list without deleting the volume.

5) Press F7 to log the deletion when the previous function key map (add a volume) appears.

Remember that changes are not recorded on disk until you press F7 while in the **main menu.**

1.5.3 ALLOCATION UNITS

AUs are the building blocks of disk files. The files you store on the hard disk are broken up and stored in AU size blocks. The minimum file size is the size of one AU. If the size of a file is one byte larger than one AU, two AUs are used to store the file.

Except for large volumes, the AU size can be 1k, 2k, 4k, 8k, 16k, 32k, or 64k. You may not be able to select a 1k AU if your volume is large. The minimum allowable AU size increases with volume size.

The amount of memory space used by the DOS to store your work depends on your selection of an optimum size for an AU. Efficient use of disk space also depends on the size you choose for the AU.

When choosing the AU size, consider:

- The size of the volume and the amount of memory required by the DOS.

- The average size of the files on the volume and the amount of disk space left unused.

1.6 HOW TO DESIGNATE THE PRIMARY BOOT VOLUME AND ASSIGN DRIVES

To designate the boot volume and assign drive letters:

1) Press F1 in the main menu. Press F1 only after you have configured the volumes. You are returned to the main menu if no volumes exist.

2) A new function key map and three screen windows appear:

   - The volume window, on the left, shows a list of volumes available for assignment.
   - The boot volume window, at the top right, shows the existing primary boot volume. If there is no existing primary boot volume, asterisks are shown in place of the boot volume name.
   - The assignment window is below the boot volume window. This window shows the existing drive assignments.

3) Choose to keep or change the existing boot volume. If you are setting up a new hard disk, you must designate (change) the boot volume. You have four function key choices:

   - F1 - KEEP: keep existing boot volume. Cursor moves to assignment window and new function key map appears.
   - F2 - CHANGE: prepare to change existing boot volume. Cursor moves to volume list and new function key map appears.
   - F5 - CANCEL: return to main menu.
   - F6 - HELP: describe function keys.

4) Press F1 to keep the existing boot volume and move on to assigning drives. The cursor moves to the assignment window, and a new function key map appears.

5) Press F2 to change the boot volume. A new function key map appears and the cursor moves to the volume list:

   a) Move the cursor to the volume you wish to be the new boot volume. All the volumes may not fit in the volume window. Access more volumes by pressing the down-arrow key when the cursor is at the last volume displayed.

   b) You now have three function key choices:

      - F5 - CANCEL: cursor returns to boot volume window and previous function key map appears.
      - F6 - HELP: describe function keys.
      - F7 - SELECT: log your boot volume choice. Cursor moves to assignment window and new function key map appears.

   c) Press F7 to log your boot volume choice and move on to assigning drives. The cursor moves to the

assignment window, and a new function key map appears.

6) Choose to keep or change drive assignments. If you are setting up a new hard disk, you must assign (change) drives. You have five function key choices:

   - F2 - CHANGE: prepare to change (or add) the drive assignment marked by cursor. Cursor moves to volume list and new function key map appears.
   - F3 - DELETE: delete all assignments following the one marked by the cursor. Cursor does not move.
   - F5 - CANCEL: cancel drive assignment changes; cursor returns to boot volume window.
   - F6 - HELP: describe function keys.
   - F7 - DONE: log drive assignment choices; return to main menu.

7) Press F7 to keep the existing drive assignments.

8) To assign drives to newly configured volumes (the assignment list is blank):

   a) Press F2. The cursor moves to the volume list, and a new function key map appears:

      - F5 - CANCEL: cursor returns to assignment list.
      - F6 - HELP: describe function keys.
      - F7 - SELECT: the volume marked by the cursor is assigned to the drive highlighted in the assignment list.

   b) Move the cursor to mark the the volume for drive A and press F7.

   c) Move the cursor to drive B. Repeat step a for drive B.

   d) Continue to assign drives in the same way for the remaining volumes. Be sure to:

      - Assign the primary boot volume and at least one floppy drive.
      - Assign RIGHTFLOPPY if you have only one floppy drive.

   e) Press F7 to log your assignments and return to the main menu.

9) To change already existing drive assignments:

   a) Move the cursor to the first drive you wish to change.

   b) Press F3 to clear the remaining drive assignments.

   c) Assign the drives in order as described above.

After you have finished assigning drives, press F7 in the Main menu to record your changes on disk.

1.7 HDSETUP ERROR MESSAGES

HDSETUP error messages are listed below in alphabetical order:

- **Bad filename. Cannot create file.**

  You may encounter this error message while creating a file for use with AUTOSET. The program terminates; the hard disk is not affected. Try again using a legal file name.

- **Cannot close data file.**

  You may encounter this error message while creating a file for use with AUTOSET. The program terminates; the hard disk is not affected.

- **Cannot create file with two hard disks present.**

  You cannot create a file for use with AUTOSET when more than one disk is present. This is because AUTOSET operates on only one disk. Disconnect all but the first drive and try again.

- **Cannot delete primary boot volume.**

  You tried to delete the primary boot volume. If you want to delete this volume, first get to the Assign menu and redesignate the boot volume.

- **Controller error. Unable to reset hard disk.**

  This indicates a hardware error. Check that the power is on for all disk drives. If the power is on, run HDTEST.

- **Disk Ø is not initialized. You cannot configure until disk Ø is initialized.**

  You must initialize disk Ø before you can create volumes.

- **Disk reading error.**

  Run HDTEST to check for errors. If HDTEST reports a media error, run HDFIXUP.

- **Error while writing data file.**

  You may encounter this error message while creating a file for use with AUTOSET. An error occurred during a write. The program terminates; the hard disk is not affected.

- **Error writing FATS and directory.**

  Run HDTEST to check for errors. If HDTEST reports a media error, run HDFIXUP. If the problem still persists, run HDFORMAT.

- **Error writing drive label backup.**

  The hard disk is in the same state it was in before you ran HDSETUP. Run HDFORMAT if you just ran HDFIXUP and then tried to reinitialize the hard disk. HDFORMAT will set the mapping correctly.

- **Error writing new volume label with assignments.**

  Run HDTEST to check for errors. If HDTEST reports a media error, run HDFIXUP. If the problem still persists, run HDFORMAT.

- **Error writing new volume label.**

  Run HDTEST to check for errors. If HDTEST reports a media error, run HDFIXUP. If the problem still persists, run HDFORMAT.

- **Error writing newly freed volume label.**

  Run HDTEST to check for errors. If HDTEST reports a media error, run HDFIXUP. If the problem still persists, run HDFORMAT.

- **Error writing valid drive label.**

  Run HDTEST to check for errors. If HDTEST reports a media error, run HDFIXUP. If the problem still persists, run HDFORMAT.

- **Error writing volume label with new assignments.**

  Run HDTEST to check for errors. If HDTEST reports a media error, run HDFIXUP. If the problem still persists, run HDFORMAT.

- **Invalid syntax in command line.**

  Retype the command line for loading the utility correctly.

- **Memory error.**

  The utility ran out of memory while executing. You must add memory to accomodate your current volume configurations.

- **No configured volumes on disk Ø.**

  You must create volumes on disk Ø before you can make drive assignments.

- **No assignments exist on the current primary boot volume.**

  Get to the Assign menu and assign drives for the volumes on your hard disk.

- **No hard disk drives exist.**

  No hard disk drives are connected to your system.

- **No primary boot volume exists.**

  Get to the Assign menu and designate a primary boot volume.

- **One of the current drive assignments is invalid.**

  Get to the Assign menu to view your drive assignments. Reassign valid volumes to drives that are marked with a line of asterisks (*).

- **Specified disk does not exist.**

  The disk you specified is not present on your system. Try specifying a disk number that is less than the one you just entered.

- **That name has already been used. Choose another.**

  You cannot name two volumes with the same name. Type another name.

- **The chosen capacity is too small. The minimum size is 2ØKbytes.**

  Type another capacity that is equal to or greater than 2Ø Kbytes.

- **The entered number of directory entries was too large. It has been adjusted.**

  You requested a larger number of directory entries than is possible for the given capacity and AU size. The number has been adjusted to reflect the largest number of directory entries possible.

- **The primary boot volume is invalid.**

  The primary boot volume is no longer valid. Get to the Assign menu and redesignate the primary boot volume.

- **The requested capacity is too large for current space availability.**

  You requested a capacity that is larger than the space available on the disk. The default capacity displayed is the maximum you can request.

- **The same volume cannot be assigned twice.**

  Choose a different volume to assign to the current drive letter.

- **The selected volume is a free volume. You cannot delete it.**

  Move the cursor to the non-free volume you wish to delete and try again.

- **The selected volume is not free. Please choose another volume.**

  You cannot add a non-free volume. Move the cursor to a free volume and try again.

- **You cannot make assignments without first choosing a boot volume.**

  The primary boot volume is invalid. Designate a valid primary boot volume.

- **You must assign a floppy drive.**

  Get to the Assign menu and assign a floppy drive. If you have only one floppy drive, be sure to assign RIGHTFLOPPY.

- **You must assign the primary boot volume.**

  Get to the Assign menu and assign the primary boot volume to a drive letter.

2. HDFIXUP

HDFIXUP repairs media on a formatted and configured hard disk (a hard disk that has been set up with HDSETUP).

The hard disk contains a number of spare tracks set aside to replace tracks that are damaged during use. HDFIXUP searches for damaged tracks, recovers as much data as possible from them, transfers the data to the spare tracks, and reports the repairs.

HDFIXUP may wipe out data already recorded on the hard disk. **Be sure to back up your hard disk files before running HDFIXUP.**

2.1 HDFIXUP OPERATION

Load HDFIXUP by typing:

hdfixup(cr)

When loaded, HDFIXUP displays its sign-on message and warning prompt:

This utility will restore media errors by redirecting them to spare tracks. You should FIRST BACKUP ALL IMPORTANT DATA before running this utility as unrecoverable errors may occur during the repair.

DO YOU WISH TO CONTINUE? (Y/N)

Type "y" to run the program or "n" to exit to the DOS.

The first screen display also tells you to use ALT-S (hold screen mode) to freeze the screen during repair reports and ALT-P (control P) to print output to the screen.

HDFIXUP searches the entire hard disk for damaged media and inconsistencies in the disk layout. If non-media errors are found or if the disk layout is not recognized, HDFIXUP reports the problem and terminates without altering the media. Non-media or disk layout problems should be reported to your service center.

After searching the hard disk, HDFIXUP compares the number of bad tracks to the number of spare tracks:

- If no errors are found, HDFIXUP reports an error-free search and terminates.

- If there are more spare tracks than bad tracks, HDFIXUP transfers the data to the spare tracks and reports the error type and location of each repair.

- If there are more bad tracks than spare tracks, HDFIXUP reports the problem and terminates. The media has been damaged beyond acceptable limits, and should be referred to a service center.

Before updating the disk labels, HDFIXUP displays a yes/no prompt giving you a last chance to exit the program without making changes to the hard disk. If you type "y" to continue the program, HDFIXUP writes a new map to the disk label, which the DOS uses at the next system boot.

When completed, HDFIXUP requests that you press the Space bar to reboot the system.

2.2 HDFIXUP ERROR MESSAGES

2.2.1 ERROR MESSAGES FOR REPAIRABLE ERRORS

After repairing errors, HDFIXUP displays the following message:

Data Retrieved from Logical Track XX.

It then lists the error location for each error that was recovered or repaired:

Error XXXX was fully recovered at Sector:
Physical XX, Logical XX, Virtual XX in Volume XX.

OR:

Error XXXX was best repaired at Sector:
Phisical XX, Logical XX, Virtual XX in Volume XX.

It then tells you:

Data Redirected to Logical Track XX.

In the error location messages, the sector is identified with three different numbers: physical, logical, and virtual. The logical number is the number given to the sector after the disk has been formatted (defective sectors found during formatting are excluded from the numbering scheme). The virtual number is the logical number minus the starting sector number of the virtual volume. **The virtual number is the number used by the DOS in file operations.** The volume number is the number shown in the HDSETUP Configuration menu.

2.2.2 ERROR MESSAGES FOR NONREPAIRABLE ERRORS

HDFIXUP displays one of two basic messages to indicate nonrepairable errors:

Contact SERVICE CENTER.
Cannot repair media - No changes made.

OR:

Contact Service Center.
Drive repair not completed.

The following messages may be displayed with the preceding messages. **Be sure to report all error messages exactly** when you contact your service center:

- **Drive is not responding. Error XX**
- **Error is not media related.**
- **Read Error XX at Sector:**
  Physical XX, Logical XX, Virtual XX in Volume XX.
- **Write Error XX at Sector:**
  Physical XX, Logical XX, Virtual XX in Volume XX.
- **Verify after Write Error at Sector:**
  Physical XX, Logical XX, Virtual XX in Volume XX.
- **Bad Backup Drive Label:**
- **Bad Master Drive Label: Unitialized or unknown Revision.**
- **Bad Master Drive Label: Null Working Media List.**
- **Bad Master Drive Label: Regions are not on track boundaries.**
- **Master Drive Label and Backup Drive Label do not match.**
- **Error while building New Label, System Error X.**
- **Error while building New Label, expanded beyond maximum size.**
- **Unrecoverable Error occurred while updating Backup Drive Label.**
- **Unrecoverable Error occurred while updating Master Drive Label.**
- **There are XX bad tracks and only XX spares available.**

3. HDTEST

HDTEST is an end user confidence test for the hard disk. Run HDTEST when you suspect hardware problems with the hard disk. You can also run HDTEST to check the hard disk when you first receive it. HDTEST does not affect data already stored on the hard disk.

3.1 HDTEST OPERATION

Load HDTEST by typing:

hdtest(cr)

During initialization, HDTEST identifies and reads the drive header label to check that the drive is a valid drive type. If HDTEST cannot determine the drive type, an error message appears and the program terminates.

After initialization, the HDTEST main menu is displayed. The menu provides eight options. You press one of the top seven function keys (labeled 1 through 7) to choose an option. To choose the eighth option (the exit option), you press function key 7 while holding down the Shift key.

Six of the eight menu options run hardware tests (function keys 1 through 6). The six test options are for:

- A quick or extended electronics test.
- A quick or extended media test.
- A quick or extended electronics/media combination test.

In general, you should run the quick electronics/media combination test first. If more testing is required, run the extended electronics/media test. The extended tests run continuously until you press the Space bar. Run the extended tests to catch intermittant problems.

Function key 7 (unshifted) shows information about defective tracks found during testing. Always run function key 7 before terminating HDTEST. Then run HDFIXUP if defective tracks are found.

The following section describes the HDTEST menu options in greater detail.

press the Space bar.

f5 - Extended Media Test

This test executes a full scan of the drive media and then does 1000 random reads over the surface. The test repeats entire test until you press the Space bar.

f6 - Extended Electronics and Media Test

This test executes f4 and f5 until you press the Space bar.

f7 - Defective Media Display

This option displays information about the defective media found during HDTEST execution. The defective-media information shows the numbers for the cylinder, head, sector, track, and logical address. Always run f7 before terminating HDTEST. If defective media is found, run HDFIXUP.

F7 - Exit

This option places heads on innermost cylinder and terminates program.

3.3 HDTEST ERROR MESSAGES

HDTEST error messages follow:

- **ERROR=> CANNOT FIND DIAGNOSTIC TRACK**
  MUST RUN HDFORMAT IN ORDER TO RUN DIAGNOSTICS

  You must reformat the disk with HDFORMAT.

- **ERROR=> UNABLE TO CONFIRM DRIVE LABEL.**
  CALL SERVICE CENTER.

  Contact your service center. Be sure to report the exact error message you received.

- **ERROR=> DETECTED DEFECTIVE ELECTRONICS.**
  CALL SERVICE CENTER.

  Contact your service center. Be sure to report the exact error message you received.

- **DETECTED THE FOLLOWING DEFECTIVE MEDIA:**

  Try running HDFIXUP. If HDFIXUP cannot repair the defective media, run HDFORMAT.

- **ERROR=> EXCESSIVE DEFECTIVE MEDIA.**
  CALL SERVICE CENTER.

  Contact your service center. Be sure to report the exact error message you received.

4. HDFORMAT

HDFORMAT reformats the hard disk. A reformatted hard disk is in the same state as when it left the factory. Run HDFORMAT on a newly installed hard disk before using it to correct errors that may have occurred during shipment.

HDFORMAT destroys all data written to the hard disk. Run HDFORMAT on a hard disk containing data only if you cannot access the hard disk or large portions of the hard disk. HDFORMAT is a last resort before replacing the hard disk.

You can run HDFORMAT only on hard disk drives that have a valid drive label header.

4.1 HDFORMAT OPERATION

Load HDFORMAT by typing:

hdformat(cr)

During initialization, HDFORMAT reads the drive header and identifies the drive as a valid drive type. If the drive header cannot be read or if the drive is the wrong type, an error message is displayed, and the program terminates. Otherwise, the program intializes the controller, and the code is set to format the drive. Before formatting begins, you are prompted to OK the format.

During the format, HDFORMAT:

1) Deletes the inservice diagnostic track from the bad track list. When the format is done, a new inservice diagnostic track (probably the same physical track) is added to the bad track list.

2) Reads the drive label, formats and checks track Ø, and writes the drive label to track Ø.

3) Formats the entire disk.

4) Records newly discovered defective track locations on the drive label.

5) Prompts you to identify tracks to be permanently recorded on the defective media list.

6) Logs the identified tracks in the drive header and writes the new drive header to the disk.

7) Displays the number of bad tracks and the percentage of the total number of tracks that are bad.

8) Positions the heads to the innermost cylinder and terminates.

If non-media errors are found, HDFORMAT terminates.

4.2 HDFORMAT ERROR MESSAGES

The HDFORMAT error messages follow:

- **ERROR=> UNABLE TO CONFIRM DRIVE LABEL.**
  CALL SERVICE CENTER.

  Contact your service center. Be sure to report the exact error message you received.

- **ERROR=> DETECTED DEFECTIVE ELECTRONICS.**
  CALL SERVICE CENTER.

  Contact your service center. Be sure to report the exact error message you received.

- **DETECTED THE FOLLOWING DEFECTIVE MEDIA:**

  Try running HDFIXUP. If HDFIXUP cannot repair the defective media, run HDFORMAT.

- **ERROR=> EXCESSIVE DEFECTIVE MEDIA.**
  CALL SERVICE CENTER.

  Contact your service center. Be sure to report the exact error message you received.

5. MAINTENANCE UTILITIES ERROR MESSAGES

5.1 HDSETUP ERROR MESSAGES

HDSETUP error messages are listed below in alphabetical order:

- **Bad filename. Cannot create file.**

  You may encounter this error message while creating a file for use with AUTOSET. The program terminates; the hard disk is not affected. Try again using a legal file name.

- **Cannot close data file.**

  You may encounter this error message while creating a file for use with AUTOSET. The program terminates; the hard disk is not affected.

- **Cannot create file with two hard disks present.**

  You cannot create a file for use with AUTOSET when more than one disk is present. This is because AUTOSET operates on only one disk. Disconnect all but the first drive and try again.

- **Cannot delete primary boot volume.**

  You tried to delete the primary boot volume. If you want to delete this volume, first get to the Assign menu and redesignate the boot volume.

- **Controller error. Unable to reset hard disk.**

  This indicates a hardware error. Check that the power is on for all disk drives. If the power is on, run HDTEST.

- **Disk Ø is not initialized. You cannot configure until disk Ø is initialized.**

  You must initialize disk Ø before you can create volumes.

- **Disk reading error.**

  Run HDTEST to check for errors. If HDTEST reports a media error, run HDFIXUP.

- **Error while writing data file.**

  You may encounter this error message while creating a file for use with AUTOSET. An error occurred during a write. The program terminates; the hard disk is not affected.

- **Error writing FATS and directory.**

  Run HDTEST to check for errors. If HDTEST reports a media error, run HDFIXUP. If the problem still persists, run HDFORMAT.

- **Error writing drive label backup.**

  The hard disk is in the same state it was in before you ran HDSETUP. Run HDFORMAT if you just ran HDFIXUP and then tried to reinitialize the hard disk. HDFORMAT will set the mapping correctly.

- **Error writing new volume label with assignments.**

  Run HDTEST to check for errors. If HDTEST reports a media error, run HDFIXUP. If the problem still persists, run HDFORMAT.

- **Error writing new volume label.**

  Run HDTEST to check for errors. If HDTEST reports a media error, run HDFIXUP. If the problem still persists, run HDFORMAT.

- **Error writing newly freed volume label.**

  Run HDTEST to check for errors. If HDTEST reports a media error, run HDFIXUP. If the problem still persists, run HDFORMAT.

- **Error writing valid drive label.**

  Run HDTEST to check for errors. If HDTEST reports a media error, run HDFIXUP. If the problem still persists, run HDFORMAT.

- **Error writing volume label with new assignments.**

  Run HDTEST to check for errors. If HDTEST reports a media error, run HDFIXUP. If the problem still persists, run HDFORMAT.

- **Invalid syntax in command line.**

  Retype the command line for loading the utility correctly.

- **Memory error.**

  The utility ran out of memory while executing. You must add memory to accomodate your current volume configurations.

- **No configured volumes on disk Ø.**

  You must create volumes on disk Ø before you can make drive assignments.

- **No assignments exist on the current primary boot volume.**

  Get to the Assign menu and assign drives for the volumes on your hard disk.

- **No hard disk drives exist.**

  No hard disk drives are connected to your system.

- **No primary boot volume exists.**

  Get to the Assign menu and designate a primary boot volume.

- **One of the current drive assignments is invalid.**

  Get to the Assign menu to view your drive assignments. Reassign valid volumes to drives that are marked with a line of asterisks (*).

- **Specified disk does not exist.**

  The disk you specified is not present on your system. Try specifying a disk number that is less than the one you just entered.

- **That name has already been used. Choose another.**

  You cannot name two volumes with the same name. Type another name.

- **The chosen capacity is too small. The minimum size is 2ØKbytes.**

  Type another capacity that is equal to or greater than 2Ø Kbytes.

- **The entered number of directory entries was too large. It has been adjusted.**

  You requested a larger number of directory entries than is possible for the given capacity and AU size. The number has been adjusted to reflect the largest number of directory entries possible.

- **The primary boot volume is invalid.**

  The primary boot volume is no longer valid. Get to the Assign menu and redesignate the primary boot volume.

- **The requested capacity is too large for current space availability.**

  You requested a capacity that is larger than the space available on the disk. The default capacity displayed is the maximum you can request.

- **The same volume cannot be assigned twice.**

  Choose a different volume to assign to the current drive letter.

- **The selected volume is a free volume. You cannot delete it.**

  Move the cursor to the non-free volume you wish to delete and try again.

- **The selected volume is not free. Please choose another volume.**

  You cannot add a non-free volume. Move the cursor to a free volume and try again.

- **You cannot make assignments without first choosing a boot volume.**

  The primary boot volume is invalid. Designate a valid primary boot volume.

- **You must assign a floppy drive.**

  Get to the Assign menu and assign a floppy drive. If you have only one floppy drive, be sure to assign RIGHTFLOPPY.

- **You must assign the primary boot volume.**

  Get to the Assign menu and assign the primary boot volume to a drive letter.

5.2 HDFIXUP ERROR MESSAGES

5.2.1 ERROR MESSAGES FOR REPAIRABLE ERRORS

After repairing errors, HDFIXUP displays the following message:

Data Retrieved from Logical Track XX.

It then lists the error location for each error that was recovered or repaired:

Error XXXX was fully recovered at Sector:
Physical XX, Logical XX, Virtual XX in Volume XX.

OR:

Error XXXX was best repaired at Sector:
Phisical XX, Logical XX, Virtual XX in Volume XX.

It then tells you:

Data Redirected to Logical Track XX.

In the error location messages, the sector is identified with three different numbers: physical, logical, and virtual. The logical number is the number given to the sector after the disk has been formatted (defective sectors found during formatting are excluded from the numbering scheme). The virtual number is the logical number minus the starting sector number of the virtual volume. **The virtual number is the number used by the DOS in file operations.** The volume number is the number shown in the HDSETUP Configuration menu.

5.2.2 ERROR MESSAGES FOR NONREPAIRABLE ERRORS

HDFIXUP displays one of two basic messages to indicate nonrepairable errors:

Contact SERVICE CENTER.
Cannot repair media - No changes made.

OR:

Contact Service Center.
Drive repair not completed.

The following messages may be displayed with the preceding messages. **Be sure to report all error messages exactly** when you contact your service center:

- **Drive is not responding. Error XX**
- **Error is not media related.**
- **Read Error XX at Sector:**
  Physical XX, Logical XX, Virtual XX in Volume XX.
- **Write Error XX at Sector:**
  Physical XX, Logical XX, Virtual XX in Volume XX.

- **Verify after Write Error at Sector:**
  Physical XX, Logical XX, Virtual XX in Volume XX.

- **Bad Backup Drive Label:**

- **Bad Master Drive Label: Unitialized or unknown Revision.**

- **Bad Master Drive Label: Null Working Media List.**

- **Bad Master Drive Label: Regions are not on track boundaries.**

- **Master Drive Label and Backup Drive Label do not match.**

- **Error while building New Label, System Error X.**

- **Error while building New Label, expanded beyond maximum size.**

- **Unrecoverable Error occurred while updating Backup Drive Label.**

- **Unrecoverable Error occurred while updating Master Drive Label.**

- **There are XX bad tracks and only XX spares available.**

5.3 HDTEST ERROR MESSAGES

The HDTEST error messages follow:

- **ERROR=> CANNOT FIND DIAGNOSTIC TRACK**
  MUST RUN HDFORMAT IN ORDER TO RUN DIAGNOSTICS

  You must reformat the disk with HDFORMAT.

- **ERROR=> UNABLE TO CONFIRM DRIVE LABEL.**
  CALL SERVICE CENTER.

  Contact your service center. Be sure to report the exact error message you received.

- **ERROR=> DETECTED DEFECTIVE ELECTRONICS.**
  CALL SERVICE CENTER.

  Contact your service center. Be sure to report the exact error message you received.

- **DETECTED THE FOLLOWING DEFECTIVE MEDIA:**

  Try running HDFIXUP. If HDFIXUP cannot repair the defective media, run HDFORMAT.

- **ERROR=> EXCESSIVE DEVECTIVE MEDIA.**
  CALL SERVICE CENTER.

  Contact your service center. Be sure to report the exact error message you received.

5.4 HDFORMAT ERROR MESSAGES

The HDFORMAT error messages follow:

- **ERROR=> UNABLE TO CONFIRM DRIVE LABEL.**
  CALL SERVICE CENTER.

  Contact your service center. Be sure to report the exact error message you received.

- **ERROR=> DETECTED DEFECTIVE ELECTRONICS.**
  CALL SERVICE CENTER.

  Contact your service center. Be sure to report the exact error message you received.

- **DETECTED THE FOLLOWING DEFECTIVE MEDIA:**

  Try running HDFIXUP. If HDFIXUP cannot repair the defective media, run HDFORMAT.

- **ERROR=> EXCESSIVE DEFECTIVE MEDIA.**
  CALL SERVICE CENTER.

  Contact your service center. Be sure to report the exact error message you received.