

After a test has been performed, a message is displayed telling you whether errors were found.

8. If no errors are found, you return to the Diagnostic Menu. If errors are found, a screen similar to that shown in Figure 6-2 is displayed. The test area in which errors occurred will blink. This screen lets you access additional error information. Enter a number from **1** to **7** to see further information on errors.

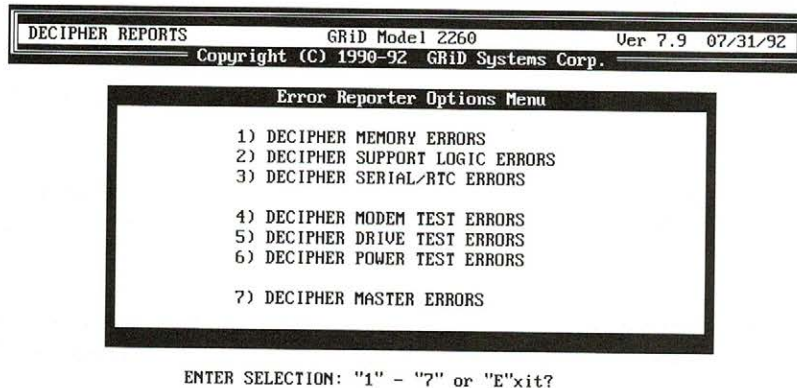
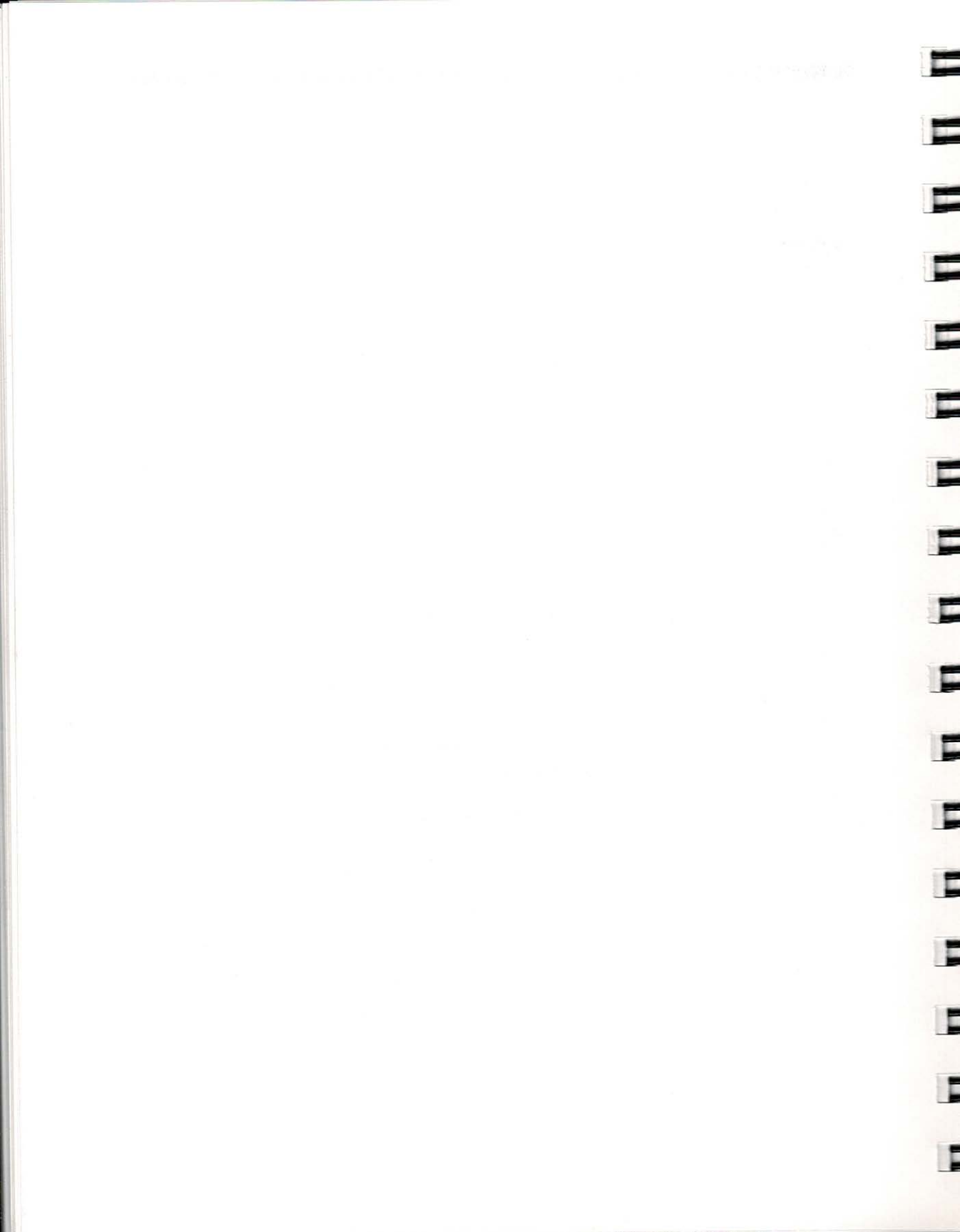


Figure 6-2. *Error Reporter Options Menu*

9. If errors are detected from these tests, or if your computer fails to operate properly, contact the GRiD Resource Center for additional assistance in diagnosing your problem or in getting your computer repaired.



---

## CHAPTER 7: SAFETY AND MAINTENANCE

---

This chapter contains important safety information and describes how to care for your GRiD Convertible computer.

Be sure to save these instructions for reference by you and other users.

Follow all instructions and warnings dealing with the computer or the power supply.

---

### Important Safety Instructions

The GRiD Convertible computer is intended to be electrically grounded when connected through the power supply to an external source of ac power.

The power supply is equipped with a three-wire grounding-type plug, which has a third (grounding) pin. This plug fits only a grounding-type power outlet. This is a safety feature.

If you are unable to insert the plug into a power outlet, contact a licensed electrician to replace the outlet with one that is properly grounded.

Do not defeat the purpose of the grounding-type plug.

#### WARNING

Electrical equipment may be hazardous if misused. Operation of this product, or similar products, must always be supervised by an adult. Do not allow children access to the interior of any electrical product, or permit them to handle any cables.

## Warnings

This product was designed and tested to comply with various national and international safety agency standards that reflected the current state of the art at the time it was manufactured. Use and application of this product require exercising common sense. It is an electrical device.

Observe the following warnings. Ignoring these warnings could lead to physical injury.

- Be sure to read all installation instructions carefully before you plug the power supply into a power outlet.
- Do not get the computer wet; electrical equipment may be hazardous in a moist environment. Keep the computer away from sources of liquids such as washbasins, bath tubs, shower stalls, etc. If the computer gets wet, wipe it off as quickly as possible.
- Never expose the computer to bad weather, such as rain or snow, for extended periods of time. The top surface of the GRiD Convertible computer is water-resistant, but the computer should not be operated if water has gotten inside the computer.
- Do not operate your computer in any potentially flammable atmosphere, unless it is specially certified for such usage.
- Do not attempt to open the computer case; it contains no user-serviceable parts. Such action voids your warranty and service contract and can damage the computer.
- Arrange any power cords or other cords so they cannot be pulled out or tripped over.
- Make sure you properly ground any power-plug adapter.

- Disconnect the power plug:
  - If the power cord or plug is frayed or otherwise damaged;
  - If the computer performs such that you suspect it needs servicing;
  - If anything has been spilled into the case;
  - If the computer has been exposed to rain or other excess moisture; or
  - If the computer has been dropped or the case is otherwise damaged.

**Attention!**

Explosion hazard if battery is replaced incorrectly. Exchange only with manufacturer authorized type. Disposal in accordance with manufacturer's instructions.

**Vorsicht!**

Explosionsgefahr bei unsachgemäßem Austausch der Batterie. Ersatz nur durch denselben oder einen von Hersteller empfohlenen ähnlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

---

## Cautions

Observe the following cautions. Ignoring these cautions could damage your computer.

- Operate the computer only when the surrounding temperature is from 5° to 40° C (41° to 104° F).
- Operate the computer only when the relative humidity level is from 10 percent to 80 percent noncondensing.
- Store the computer where the surrounding temperature is from -20° to 60° C (-4° to 140° F).
- Do not operate the computer in an excessively dirty or dusty environment.

- Do not subject the computer to unnecessary shock or vibration.
- When cleaning the computer, never use any cleaning agent such as dust wax, spray cleaner, or any abrasive substance.

---

## Computer Ruggedness

Your GRiD Convertible computer is a rugged, durable computer. It has been designed to stand up to a certain amount of shock and rough handling, but you should always treat it as you would any other precision instrument—with care.

The most fragile part of the computer is its screen. The screen is made of glass and could break if the computer is dropped or if the screen is bumped against a hard object. Keep this in mind as you handle or carry the computer.

When you carry the computer, carry it with the screen towards you, to prevent it from accidentally hitting something. You should use a protective carrying case whenever possible.

The GRiD Convertible computer is not designed to withstand extreme temperatures. Be careful not to leave the computer inside a closed vehicle in the sun for an extended time. Enclosed vehicles can heat up to extreme temperatures when in the sun, and the GRiD Convertible computer could be damaged if the temperature exceeds 60° C (140° F).

If the computer is heated to a high temperature, the screen may darken and become unreadable. If this happens, let the computer cool before using it. Very cold temperatures may also affect the screen contrast, requiring you to adjust it.

---

## Cleaning the Computer

Before cleaning your computer, turn it off and disconnect the power cord from the outlet.

To clean the case, use a slightly damp, soft cloth and plain water. If necessary, you can use a mild, nonabrasive detergent.

**CAUTION**

Never use any cleaning agent such as dust wax, spray cleaner, or any abrasive substance.

Wipe the case clean and then dry it.

To clean the screen, slightly dampen a soft cloth with water or an ammonia-based glass cleaner and gently wipe the screen. Use the cleaner sparingly so that no fluid runs down the screen and into the frame. Do not use a cleaner that leaves any residue.

**WARNING**

To prevent shock hazard, never apply any liquid to the openings or connectors on your computer.
---

---

**Storing the Computer**

Always store your computer between the temperatures  $-20^{\circ}$  to  $60^{\circ}$  C ( $-4^{\circ}$  to  $140^{\circ}$  F). To keep it free from dust and dirt, store it in a protected location. Keep it in a carrying case or its original shipping carton.

If you are storing the computer for an extended period of time, you should back up the data on storage PC Cards to some other storage medium, since the battery that maintains the data in these cards may become exhausted. The data on these cards is maintained by a battery that lasts at least six months.

---

**Traveling with the Computer**

When traveling with your computer, keep it in a protective carrying case and carry it instead of checking it as luggage. Many transportation carriers do not cover the replacement cost of your computer should they lose or damage it. If you do check it as luggage, pack it in the original shipping carton and packing materials that came with your computer. Any damage incurred due to improper shipping is considered abuse and will not be covered under the warranty.

### CAUTION

If you are carrying the battery pack attached to the computer, make sure that the power switch is off. If it is left on, the battery pack will discharge during transportation. As an extra precaution, you may want to remove the battery pack from the computer and carry it separately.

It should be safe to x-ray the computer or any peripherals in airport security checks, but you can have it hand-checked, if you wish.

---

## Updating the Clock

The time-of-day clock, which keeps the time inside the computer, is not a high-precision time keeper. The precision of its time-measuring electronics may vary because of temperature changes. Check the time and date of your clock periodically.

To change the time or date, use the MS-DOS commands **time** or **date**. Refer to MS-DOS Quick Reference in Chapter 8 for more information about these commands.



---

## CHAPTER 8: USING MS-DOS ON THE GRID CONVERTIBLE COMPUTER

---

Each time you turn on the GRiD Convertible computer, it loads the MS-DOS operating system from the internal hard drive or another storage device. This is the same operating system used by other IBM PC-compatible computers. It then loads Microsoft Windows for Pen Computing software.

Depending on how your GRiD Convertible computer is set up, you may never need to interact directly with the MS-DOS operating system. Your computer may start up and go directly into an application program or a menu from which you can pick a program to run.

If you want to use MS-DOS commands on the GRiD Convertible computer or run MS-DOS programs, you should read this chapter. It contains important information about how to use MS-DOS.

---

### MS-DOS Start-up

The computer searches for the MS-DOS files on drive C—the hard disk. You can change the search order with the **config boot** command (refer to page 9-15).

After MS-DOS starts up, the first thing it does is look for the file *config.sys*. If it finds this file, MS-DOS reads it and loads device drivers or sets system configuration information based on commands in this file. Then the *autoexec.bat* file is read and those commands are executed. The default *config.sys* and *autoexec.bat* files are described next.

## Config.Sys File

The default *config.sys* file contains the following lines:

```
Device=C:\Windows\HiMem.Sys
DOS=High,UMB

REM The only upper memory available is from C000-CFFF. This can be used
REM as the EMS page frame or as upper memory used to load programs into
REM upper memory but not both.
REM The rest of the upper memory area is allocated as:

REM   PCMCIA RAM card driver           D000-DFFF
REM   VGA BIOS                         E000-EBFF
REM   System BIOS                       F000-PFFF

REM The following EMM386 provides 256KB of expanded memory to the system
REM Device = C:\DOS\EMM386.Exe 256 Frame=C000 I=C000-CFFF I=EC00-EFFF

REM The following EMM386 provides 80KB of high memory to load
REM device drivers
Device = C:\DOS\EMM386.Exe NoEms I=C000-CFFF I=EC00-EFFF

REM The following EMM386 provides 144KB of high memory to load device
REM drivers. This can only be used if no PCMCIA card drivers that use
REM memory from D000-DFFF are used. For example, CMCDD.Sys must be
REM commented out.
REM Device = C:\DOS\EMM386.Exe NoEms I=C000-CFFF I=D000-DFFF I=EC00-EFFF

DeviceHigh = C:\DOS\SetVer.Exe

REM Power.Exe provides power management for MS-DOS applications
DeviceHigh = C:\DOS\Power.Exe Adv

REM CMCDD.Sys is the device driver to support PCMCIA RAM cards
DeviceHigh = C:\GridUtil\CMCDD.Sys

Stacks = 9,256
Files = 30
Buffers = 15
Shell = C:\Command.Com C:\ /P /E:800
```

To install a device driver that has been commented out, delete the letters "REM", save the file, and reboot your computer. You may also comment out device drivers you do not wish to have active.

## Autoexec.Bat File

The default *autoexec.bat* file that is loaded on the hard disk contains the following commands:

```
@echo off
c:\windows\smartdrv.exe
prompt $p$g
path c:\windows;c:\gridutil;c:\dos
loadhigh Doskey
win /3
padmenu
```

This *autoexec.bat* file sets the path and shows the path in the prompt. The Doskey program is loaded. Windows for Pen Computing is also loaded when the computer boots. If you exit Windows, the Padmenu (described on page 9-1) is displayed.

*Smartdrv.exe* is the disk-caching program provided with Windows. It requires extended memory. The default extended memory allocated depends on the amount of extended memory available.

---

## Using System Memory

MS-DOS 5.0 comes with the *himem.sys* driver to manage extended memory (the memory over 1 MB) and upper memory (the memory between 640 kB and 1 MB). It incorporates the rules and guidelines set forth in Version 2.0 of the Extended Memory Specification (XMS).

Your GRiD Convertible computer has 1408 kB of extended memory (in the default configuration). You may add either 2 MB or 6 MB of additional memory.

In order to use this memory as expanded memory (ems), you must install on your system the device driver, *emm386.exe*. This driver uses extended memory to simulate expanded memory for programs that can use expanded memory. It also makes it possible to load programs and device drivers into the upper memory area.

The following statement is in the default *config.sys* file on your computer.

```
device=c:\dos\emm386.exe 256 frame=C000 I=C000-CFFF I=EC00-EFFF
```

The letters "rem" at the beginning indicate it was commented out. Remove the letters "rem" to install the *emm386.exe* driver on your system.

You may change the value 256, which is kilobytes of EMS memory, to another value, depending on how much memory your computer has available. Do not change the **FRAME** and **I** parameters. The **RAM** parameter should not be used on the GRiD Convertible computer.

After adding this line to the *config.sys* file, you must restart your computer (press **Ctrl-Alt-Del**) for the device driver to take effect.

Programs that use EMS will automatically do so when you install the *emm386.exe* driver. For more information on how MS-DOS applications use EMS, refer to the documentation provided with those programs.

---

## Using Storage PC Cards

Your GRiD Convertible computer has a slot that provides the capability to use storage cards that conform to the PCMCIA specification. In order to use the storage PC Cards, you must include the *cmcdd.sys* driver in your *config.sys* file.

The following statement is in the default *config.sys* file on your computer.

```
device=c:\gridutil\cmcdd.sys
```

You may add two optional switches to the command. The **/part=*n*** switch specifies the maximum number of partitions per card; *n* is a number between 1 and 8. The **/port=*address*** switch specifies the I/O address of the PC memory card drive; *address* is a hex value between 100 and 3F0.

After adding this line to the *config.sys* file and saving your file, you must restart your computer (press **Ctrl-Alt-Del**) for the device driver to take effect.

---

## Using Standard MS-DOS Application Programs

The GRiD Convertible computer can run "off-the-shelf" MS-DOS programs. The computer is an IBM AT-compatible computer, so most programs that can run on the IBM AT computer can run on the GRiD Convertible computer.

Each of the GRiD Convertible storage devices appears like a disk drive to MS-DOS and is assigned a drive letter. The storage devices are assigned drive letters as shown in Table 8-1. This table assumes that none of the storage devices are partitioned. If the hard disk is partitioned, the device letter for the storage PC Card is the next available letter. You can determine your device configuration by running the **devices** command, described on page 9-30. This program shows you the drive letters assigned to each of the storage devices.

*Table 8-1. Storage Device Drive Letters*

<b>Drive Letter</b>	<b>Storage Devices</b>
A	External floppy
B	Logical drive for external floppy
C	Hard disk
D	Storage PC Card

The hard disk and storage PC Cards can be partitioned. When a storage PC Card is partitioned, the additional partitions start with E.

---

## Using MS-DOS

MS-DOS is an operating system that manages your computer's operations and conveys your instructions to the computer. How much you need to know about the MS-DOS operating system depends on how you plan to use your computer. If you plan to use advanced operating system features or create your own applications, you need to become quite familiar with MS-DOS.

### How MS-DOS Stores Information

If you want to learn more about how your operating system works, you need to know how MS-DOS organizes and stores information.

## About Files

Your computer stores all information on the diskette in *files*. A file is a collection of information. These are the main types of files:

- *System files* contain operating system information that manages the computer's operations.
- *Application files* contain information that causes the computer to perform a task or set of tasks.
- *Data files* contain information you enter, such as the documents and spreadsheets you create with software.

## Creating Filenames

Following is a complete list of acceptable characters for filenames:

- Uppercase letters A through Z
- Lowercase letters a through z
- Decimal digits 0-9
- Symbols \$ & # % ' ( ) @ - { } ! \_ ~

When you create filenames and subdirectory names, you can use up to eight characters. MS-DOS ignores any characters after the eighth. For example, MS-DOS regards both *Accounts1* and *Accounts2* as *Accounts*. If you save both files, MS-DOS writes over the first file with the second, destroying the first file. Also, MS-DOS does not distinguish between upper and lowercase letters.

You cannot use the following special MS-DOS device names for filenames:

aux	com1	com2	com3
con	lpt1	lpt2	com4
lpt3	nul	prn	clock\$

The following examples are **valid** filenames:

mydatal	SAMPLE
1.TST	\$100GIFT
records.art	'HELP'.fil
XXX.XX	File#1.txt
10%SALES	par@64.gam

The following examples are **invalid** filenames:

**his\*hers** — The asterisk is not a valid character for filenames.

**.DATA** — The period is valid in a filename only when it separates the filename from its extension.

**regionsales** — Filenames have a maximum of eight characters. MS-DOS uses only the first eight characters you enter.

**COST+INT** — The plus symbol is not a valid character.

**CON.dat** — CON is a word reserved by MS-DOS.

## Filename Extensions

Any filename or directory can contain an *extension*, which further identifies the file. An extension appears at the end of a filename, preceded by a period.

Extensions can have up to three characters and can include the same characters allowed in filenames. If you try to give extensions more than three characters, MS-DOS uses only the first three.

If you include an extension in a filename, you must use that extension whenever you specify the file.

**NOTE:** Some applications automatically assign an extension to a filename.

## Looking Inside Files

**Type** is a command that lets you examine files that consist of text characters. For instance, to view the *joe.sls* file, type:

```
type joe.sls Enter
```

The file contents appear on the screen. If there are too many lines in the file to fit on the screen, use **Ctrl-S** or **Pause** to stop the screen from scrolling. Press any key to resume scrolling.

If you use **type** to display a file that is not a text file, the computer displays meaningless data.

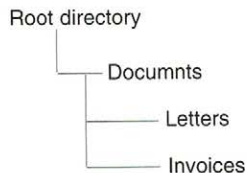
## About Directories

All files reside in *directories*. A directory is a storage space for your files. When you format a diskette, you create one directory called the *root* directory. On your MS-DOS system diskette, the root directory contains all command and system files. When you start up your computer using MS-DOS, you are automatically in (operating from) the root directory.

You can create other directories using the **md** command. The new directory is a *subdirectory* of the directory you are in when you create the directory. For example, if you create a subdirectory named *documnts*, it resides in the root directory and your disk organization looks like this:



You can now store files in the *documnts* subdirectory. If you change your current directory to the *documnts* directory using the **cd** command, then make two more subdirectories called *letters* and *invoices*, your directory looks like this:





In each subdirectory you can save files with related information. For example, save your letters in the *letters* subdirectory of *documnts* and save your invoices in the *invoices* subdirectory of *documnts*.

Your computer uses a shorter way of referring to subdirectories and files. The computer always refers to the root directory as `\`. The computer refers to files and subdirectories of the root directory as the names of those files or subdirectories, preceded by `\`. In the above example, we refer to the *documnts* directory as `\documnts`. To refer to the next level of subdirectory or a file in `\documnts`, add a `\`, then the name of the file or subdirectory—for example, `\documnts\letters`.

## Viewing a Directory

To view the contents of the current directory, type the following:

```
dir Enter
```

If a diskette contains more filenames than can appear on the screen at one time, all but the last 22 filenames scroll off the top of the screen. You can control the scrolling by using any of these three methods:

- Press **Ctrl-S** to stop the screen from scrolling. (Press any key to restart the scrolling.)
- Use the **/P** switch with the **dir** command. The **/P** switch tells MS-DOS to display only 23 lines of the directory at one time. Press the spacebar to display another screen. To use the **/P** switch, type the following:

```
dir /p Enter
```

- Use the **/W** switch to display the files in five columns. To use the **/W** switch, type the following:

```
dir /w Enter
```

## Installing MS-DOS

MS-DOS was installed on your internal hard drive at the factory. However, if you need to install MS-DOS, perform the following steps:

1. Turn off your computer.
2. Connect the external floppy drive to the parallel/floppy connector, as described on page 5-19.
3. Insert MS-DOS Disk 1 in the floppy drive.
4. Turn on your computer.
5. Press the **E** key after the beep sounds to boot from the floppy disk.
6. Follow the instructions on your screen.

If you have any questions about any of the procedures or options, you can request help by pressing the **F1** key.

After you install MS-DOS, create a system disk so you can start MS-DOS if your hard disk should fail. A system disk contains only the files required to start your system with MS-DOS version 5.0. To create a system disk:

1. Insert a blank, formatted floppy disk in the floppy diskette drive. Be sure the floppy diskette drive is connected to the parallel/floppy connector on the computer.
2. At the C:> prompt, type **sys a: Enter**

MS-DOS copies system files to the floppy disk.

If your hard disk fails, start MS-DOS by inserting the system disk in the floppy drive and restarting your computer. Then press **E** to boot from the floppy.

## Entering MS-DOS Commands

You type MS-DOS instructions, or *commands*, at the system prompt (such as C:\> or A:\>), which tells you that MS-DOS is ready to accept commands. A command consists of one word. A *command line* consists of one or more commands and their associated parameters and switches. A command line can have a maximum of 127 characters, including any combination of uppercase or lowercase letters. *Parameters* and *switches* are special information you include with a command. They provide information to the command, or they determine how the command operates.

You must enter MS-DOS commands exactly as given. Your computer carries out MS-DOS commands exactly as you enter them. If you mistype a command, MS-DOS gives you an error message.

Press **Enter** after you enter the MS-DOS command. For example, to clear the screen, type:

```
cls Enter
```

If you notice a typing mistake before you press **Enter**, do one of the following:

- Backspace to the mistake, and retype to the end of the line.
- Press **Esc** and retype the command. The system prompt does not reappear. After you retype the command, press **Enter** to execute it.

## Using Online Help

Your GRiD Convertible computer has an online MS-DOS Help program that provides information about MS-DOS commands. The Help program provides information in two different forms—a summary of what each command does, and a more detailed listing of the syntax and options for each command.

To use the Help program, type the following:

```
help Enter
```

The first screen of general information appears. Press a key to display additional screens of information.

To display more detailed information about a particular command, type **help** plus the name of the command. For example, to see information about the **append** command, type the following:

```
help append Enter
```

Information describing the **append** command is displayed.

## Using the MS-DOS Shell

The MS-DOS Shell helps you run programs and use MS-DOS commands. To run the MS-DOS Shell, type the following:

```
dosshell Enter
```

The MS-DOS shell's main screen appears.

**NOTE:** Add the **dosshell** command to the *autoexec.bat* file if you want to load the shell each time you turn on the computer.

- Use a mouse or press **Alt** and the arrow keys to select a menu. To choose a program or command, highlight the program or command name and press **Enter**.
- Press the **Tab** to move from one window to another.
- Use the arrow keys to select items within a window.

For online help for the MS-DOS shell, press **F10**. Then, select **help** and press **Enter**. Or, you can press **F1** for help information about the currently highlighted topic.

## Special Keys

The following keys and key combinations have special significance to MS-DOS.

**Spacebar** — Moves the cursor (the flashing underline or block character displayed on the screen) one space to the right and adds a space to a line.

**Ctrl** — Lets you give commands to your computer by pressing only two or three keys. Press and hold down **Ctrl**. Then, while you hold down **Ctrl**, press the other keys.

**Backspace** — Moves the cursor left one character and erases the character in that position.

**Ctrl-C** or **Ctrl-Break** — Stops the execution of an MS-DOS command or an application that uses MS-DOS functions. If the application does not access MS-DOS, the application does not recognize this key combination. (The computer might take a few seconds to recognize the key combination.)

**Ctrl-PrtSc** or **Ctrl-P** — Sends each character of output to the printer. Press the combination again to stop print echo.

**PrtSc** — Sends the current display to the printer.

**Esc** — Terminates the current line without processing the command. The cursor moves down one line and returns to the left margin. Although the system prompt does not appear, the system is ready for a command.

**Enter** — Executes a command and begins processing the command line you type. Pressing **Enter** also causes a carriage return and line feed. (The cursor moves down one line and returns to the left margin.)

**Ctrl-J** — Ends the current line, and moves the cursor to the next line without processing the line. Press **Enter** to execute the command line when it is complete.

**Ctrl-Alt-Del** — Resets your computer the same as if you had turned it off and then on again.

**Ctrl-S** or **Pause** — Stops scrolling information on the screen to let you view it. Press a key to resume scrolling.

## MS-DOS Editing Keys

MS-DOS provides several keys and key combinations to help you edit an MS-DOS command line. These keys act on the command line in the last-command memory, or *template*. Press **F3** to display the template. You can execute the command line again by pressing **Enter**, or you can use the following keys to edit the command line in the template.

**Enter** — Enter line. Makes the new line the new template and executes the command line.

**Esc** — Voids the new line without affecting the template.

**Ins** — Insert character. Goes into the insert mode so that you can insert characters into the template. Press **F3** to end the insert function.

**Del** — Delete character. Erases the next character from the template. The character is skipped and is not copied to the command line.

**F1** — Copy character. Copies the next character from the template and displays it on the command line.

**F2** (*character*) — Copy to character. Copies all characters in the template up to the specified character and displays the characters on the command line.

**F3** — Display template. Redisplays the entire template.

**F4** (*character*) — Delete to character. Deletes all characters up to the character indicated. These characters are skipped and not copied to the command line.

**F5** — Replace template. Makes the line you type the new template but does not execute the command.

**F6** or **Ctrl-Z** — End-of-file. Puts an end-of-file marker in the template.

## Backing Up the Hard Disk

Making backups of hard disk files is very important. Because the storage capacity of a hard disk is so great, loss of data can result in the loss of thousands of hours of work.

You can use the **backup** command to make copies of one or more directories or of the entire hard disk. For example, if you have a subdirectory named *mystuff* in the root directory of the hard disk, you can use the **backup** command to copy the subdirectory to a diskette. With a formatted diskette in Drive A, type the following:

```
backup c:\mystuff a: /s Enter
```

**NOTE:** Unless you specify otherwise, using this method causes MS-DOS to erase any files currently on the diskette used for the hard disk backup. Be sure you use a newly formatted diskette or a diskette that contains files you do not want to keep.

To accomplish the same backup without erasing files currently on the diskette, add the **/a** switch to the command. The **/a** switch causes the **backup** command to add the new files to any existing files on the diskette. In MS-DOS, a switch is always preceded by a slash (/) symbol. The same command with the **/a** switch is:

```
backup c:\mystuff a: /s/a Enter
```

The **/s** switch, used in the previous command, instructs MS-DOS to back up all the files in a directory and all the directories and files that branch from that specified directory.

You can use the **backup** command with the **/s** switch to back up the entire hard disk to diskettes. Before you use this command, use the **format** command to prepare enough diskettes to hold all the files you want to back up. To back up everything on Drive C, type:

```
backup c:\ a: /s Enter
```

The backward slash (\) is an abbreviation for the root directory of any disk. This command line instructs MS-DOS to copy all files from the root directory of Drive C (the hard disk) to the diskette in drive A. Because all directories branch from the

root directory, **backup** copies all the files in all the disk directories. For more information on **backup** and its switches, refer to the section MS-DOS Quick Reference.

## Restoring Backups to the Hard Disk

Use the **restore** command to copy one or more backed up directories from a diskette to the hard disk. Use **restore** only for those directories that were copied to the diskette with the **backup** command.

To restore the directory *mystuff* from the diskette in Drive A back to the hard disk (Drive C), type:

```
restore a: c:\mystuff\*.* /s Enter
```

To restore all the files that were backed up from all directories of Drive C, insert the first backup diskette into Drive A and type:

```
restore a: c: /s Enter
```

The **/s** switch instructs MS-DOS to copy all files and directories that were saved on diskettes with the **backup** command. If the backup required more than one diskette, MS-DOS prompts you to change diskettes during the restore procedure.

For more information about **restore** and its options, refer to the section MS-DOS Quick Reference.

### CAUTION

The Disk indicator lights whenever the computer accesses the hard disk. Do not turn off the computer when the Disk indicator is on. The data on the hard disk could be lost or distorted.



---

## MS-DOS Quick Reference

---

### APPEND

Enables programs to open data files in specified directories as if these files were in the current directory.

```
Append [[drive:]path[;...]] [/X[:ON|:OFF]]  
[/PATH:ON|/PATH:OFF] [/E]
```

*drive:path* Specifies the drive and directory to be appended to the current directory. You can specify multiple entries of *drive:path*, separating the entries with semicolons.

;  
Cancels the existing list of appended directories.

/X[:ON|:OFF] Specifies whether MS-DOS is to search appended directories when executing programs.

/PATH:ON|PATH:OFF Specifies whether a program is to search appended directories for a data file when a path is already included with the name of the file the program is looking for.

/E Assigns the list of appended directories to an environment variable named APPEND.

### ASSIGN

Redirects requests for disk operations on one drive to another.

```
Assign [x[:]=y[:][...]]
```

```
Assign /status
```

*x* Specifies the drive letter to reassign.

*y* Specifies the drive that *x*: will be assigned to.

**/STATUS** Displays current drive assignments.

Type **assign** without parameters to reset all drive letters to original assignments.

## ATTRIB

Displays or changes file attributes.

```
Attrib [+R | -R] [+A | -A] [+S | -S] [+H | -H]
[[drive:] [path] filename] [/S]
```

<b>+</b>	Sets an attribute.
<b>-</b>	Clears an attribute.
<b>R</b>	Read-only file attribute.
<b>A</b>	Archive file attribute.
<b>S</b>	System file attribute.
<b>H</b>	Hidden file attribute.
<b>/S</b>	Processes files in all directories in the specified path.

## BACKUP

Backs up one or more files from one disk to another.

```
Backup source destination-drive: [/S] [/M] [/A]
[/F[:size]] [/D:date[/T:time]]
[/L[: [drive:] [path] logfile]]
```

*source* Specifies the file(s), drive, or directory to back up.

*destination-drive:* Specifies the drive to save backup copies onto.

**/S** Backs up contents of subdirectories.

**/M** Backs up only files that have changed since the last backup.

**/A** Adds backup files to an existing backup disk.

**/F:[size]** Specifies the size of the disk to be formatted.

*/D:date* Backs up only files changed on or after the specified date.

*/T:time* Backs up only files changed at or after the specified time.

*/L:[drive:][path]logfile* Creates a log file and entry to record the backup operation.

## BREAK

**Break** [ON | OFF]

Type **break** without a parameter to display the current break setting.

## CALL

Calls one batch program from another.

**Call** [*drive:*][*path*] *filename* [*batch-parameters*]

*batch-parameters* Specifies any command-line information required by the batch program.

## CD

Displays the name of or changes the current directory.

**cd** [*drive:*][*path*]

**Cd[...]** Specifies that you want to change to the parent directory.

Type **cd** *drive:* to display the current directory in the specified drive.

Type **cd** without parameters to display the current drive and directory.

## CHCP

Displays or sets the active code page number.

```
Chcp [nnn]
```

*nnn* Specifies a code page number.

Type **chcp** without a parameter to display the active code page number.

## CHDIR

Displays the name of or changes the current directory.

```
Chdir [drive:][path]
```

```
Chdir[...]
```

## CHKDSK

Checks a disk and displays a status report.

```
Chkdsk [drive:][[path] filename] [/F] [/V]
```

*[drive:][path]* Specifies the drive and directory to check.

*filename* Specifies the file(s) to check for fragmentation.

**/F** Fixes errors on the disk.

**/V** Displays the full path and name of every file on the disk.

Type **chkdsk** without parameters to check the current disk.

## CLS

Clears the screen.

```
cls
```

## COMMAND

Starts a new instance of the MS-DOS command interpreter.

```
Command [[drive:]path] [device] [/E:nnnnn] [/P]  
[/C string] [/MSG]
```

*[drive:]path* Specifies the directory containing *command.com* file.

*device* Specifies the device to use for command input and output.

*/E:nnnnn* Sets the initial environment size to *nnnnn* bytes.

*/P* Makes the new command interpreter permanent (can't exit).

*/C string* Carries out the command specified by *string*, and then stops.

*/MSG* Specifies that all error messages be stored in memory. You need to specify */P* with this switch.

## COMP

Compares the contents of two files or sets of files.

```
Comp [data1] [data2] [/D] [/A] [/L] [/N=number] [/C]
```

*data1* Specifies location and name(s) of first file(s) to compare.

*data2* Specifies location and name(s) of second files to compare.

*/D* Displays differences in decimal format. This is the default setting.

**/A** Displays differences in ASCII characters.

**/L** Displays line numbers for differences.

**/N=number** Compares only the first specified number of lines in each file.

**/C** Disregards case of ASCII letters when comparing files.

To compare sets of files, use wildcards in *data1* and *data2* parameters.

## COPY

Copies one or more files to another location.

```
Copy [/A |/B] source [/A |/B] [+ source [/A |/B]
[+ ...]] [destination [/A |/B]] [/V]
```

*source* Specifies the file or files to be copied.

**/A** Indicates an ASCII text file.

**/B** Indicates a binary file.

*destination* Specifies the directory and/or filename for the new file(s).

**/V** Verifies that new files are written correctly.

To append files, specify a single file for *destination*, but multiple files for *source* (using wildcards or file1+file2+file3 format).

## CTTY

Changes the terminal device used to control your system.

```
Ctty device
```

*device* The terminal device you want to use, such as COM1.

## DATE

Displays or sets the date.

```
Date [date]
```

Type **date** without parameters to display the current date setting and a prompt for a new one.

Press **Enter** to keep the same date.

## DEBUG

Runs Debug, a program testing and editing tool.

```
Debug [[drive:][path]filename [testfile-parameters]]
```

*[drive:][path]filename* Specifies the file you want to test.

*testfile-parameters* Specifies command-line information required by the file you want to test.

After Debug starts, type **?** to display a list of debugging commands.

## DEL

Deletes one or more files.

```
Del [drive:][path]filename [/P]
```

```
Erase [drive:][path]filename [/P]
```

*[drive:][path]filename* Specifies the file(s) to delete. Specify multiple files by using wildcards.

**/P** Prompts for confirmation before deleting each file.

## DISKCOMP

Compares the contents of two floppy disks.

```
Diskcomp [drive1: [drive2:]] [/1] [/8]
```

/1 Compares the first side of the disks.

/8 Compares only the first eight sectors of each track.

## DISKCOPY

Copies the contents of one floppy disk to another.

```
Diskcopy [drive1: [drive2:]] [/1] [/V]
```

/1 Copies only the first side of the disk.

/V Verifies that the information is copied correctly.

The two floppy disks must be the same type.

You may specify the same drive for *drive1* and *drive2*.

## DIR

Displays a list of files and subdirectories in a directory.

```
Dir [drive:][path][filename] [/P] [/W]  
[/A[:]attributes] [/O[:]sortorder] [/S] [/B] [/L]
```

[drive:][path][filename] Specifies drive, directory, and/or files to list.

/P Pauses after each screenful of information.

/W Uses wide list format.



**/A** Displays files with specified attributes.

<i>attributes</i>	<b>D</b>	Directories	<b>R</b>	Read-only files
	<b>H</b>	Hidden files	<b>A</b>	Files ready for archiving
	<b>S</b>	System files	<b>-</b>	Prefix meaning "not"

**/O** List by files in sorted order.

<i>sortorder</i>	<b>N</b>	By name (alphabetic)	<b>S</b>	By size (smallest first)
	<b>E</b>	By extension (alphabetic)	<b>D</b>	By date & time (earliest first)
	<b>G</b>	Group directories first	<b>-</b>	Prefix to reverse order

**/S** Displays files in specified directory and all subdirectories.

**/B** Uses bare format (no heading information or summary).

**/L** Uses lowercase.

Switches may be preset in the DIRCMD environment variable. Override preset switches by prefixing any switch with - (hyphen)—for example, **/-W**.

## ECHO

Displays messages, or turns command-echoing on or off.

**Echo** [**ON** | **OFF**]

**Echo** [*message*]

Type **echo** without parameters to display the current echo setting.

## EDIT

Starts the MS-DOS Editor, which creates and changes ASCII files.

**Edit** [[*drive:*][*path*]*filename*] [**/B**] [**/G**] [**/H**] [**/NOHI**]

*[drive:][path]filename* Specifies the ASCII file to edit.

**/B** Allows use of a monochrome monitor with a color graphics card.

**/G** Provides the fastest update of a CGA screen.

**/H** Displays the maximum number of lines possible for your hardware.

**/NOHI** Allows the use of a monitor without high-intensity support.

## EDLIN

Starts Edlin, a line-oriented text editor.

```
EDLIN [drive:] [path] filename [/B]
```

**/B** Ignores end-of-file (**Ctrl-Z**) characters.

## EMM386

Turns on or off EMM386 expanded memory support.

```
Emm386 [ON | OFF | AUTO] [W=ON | W=OFF]
```

**ON | OFF | AUTO** Activates or suspends *emm386.exe* device driver, or places it in auto mode.

**W=ON | OFF** Turns on or off Weitek coprocessor support.

## ERASE

Deletes one or more files.

```
Del [drive:] [path] filename [/P]
```

```
Erase [drive:] [path] filename [/P]
```

*[drive:][path]filename* Specifies the file(s) to delete. Specify multiple files by using wildcards.

**/P** Prompts for confirmation before deleting each file.

## EXE2BIN

Converts *.exe* (executable) files to binary format.

```
Exe2bin [drive1:][path1]input-file  
[[drive2:][path2]output-file]
```

*input-file* Specifies the *.exe* file to be converted.

*output-file* Specifies the binary file to be created.

## EXIT

Quits the *command.com* program (command interpreter).

```
Exit
```

## EXPAND

Expands one or more compressed files.

```
Expand [drive:][path]filename  
[[drive1:][path1]filename[ ...]] destination
```

*[drive:][path]filename* Specifies the location and/or name of a file or set of files to be expanded. You cannot use wildcards.

*destination* Specifies the new location and/or name of an expanded file or set of files.

Destination can be a drive letter and colon, directory name, filename, or combination. The destination can only be a filename if you have specified a single filename for the source filename parameter. To expand multiple files to a different directory and keep the original filenames, specify only a directory as the destination.

## FASTOPEN

Decreases the amount of time needed to open frequently used files and directories.

```
Fastopen drive: [[=n] [drive: [[=n] [ ...]] [/X]
```

*drive*: Specifies the hard disk drive you want **fastopen** to work with.

**n** Specifies the maximum number of file locations **fastopen** retains in its filename cache.

/X Creates the filename cache in expanded memory.

## FC

Compares two files or sets of files and displays the differences between them.

```
Fc [/A] [/C] [/L] [/LBn] [/N] [/T] [/W] [/nnnn]  
[drive1:] [path1] filename1 [drive2:] [path2] filename2
```

```
Fc /B [drive1:] [path1] filename1  
[drive2:] [path2] filename2
```

/A Displays only first and last lines for each set of differences.

/B Performs a binary comparison.

/C Disregards the case of letters.

/L Compares files as ASCII text.

/LB**n** Sets the maximum consecutive mismatches to the specified number of lines.

- `/N` Displays the line numbers on an ASCII comparison.
- `/T` Does not expand tabs to spaces.
- `/W` Compresses white space (tabs and spaces) for comparison.
- `/mnm` Specifies the number of consecutive lines that must match after a mismatch.

## FDISK

Configures a hard disk for use with MS-DOS.

`Fdisk`

## FIND

Searches for a text string in a file or files.

```
Find [/V] [/C] [/N] [/I] "string"
[[drive:][path]filename[...]]
```

- `/V` Displays all lines NOT containing the specified string.
- `/C` Displays only the count of lines containing the string.
- `/N` Displays line numbers with the displayed lines.
- `/I` Ignores the case of characters when searching for the string.
- `"string"` Specifies the text string to find.

`[drive:][path]filename` Specifies a file or files to search.

If a pathname is not specified, **find** searches the text typed at the prompt or piped from another command.

## FOR

Runs a specified command for each file in a set of files.

```
For %variable IN (set) DO command
[command-parameters]
```

*%variable* Specifies a replaceable parameter.

(*set*) Specifies a set of one or more files. Wildcards may be used.

*command* Specifies the command to carry out for each file.

*command-parameters* Specifies parameters or switches for the specified command.

To use the **for** command in a batch program, specify %%*variable* instead of *%variable*.

## FORMAT

Formats a disk for use with MS-DOS.

```
Format drive: [/V[:label]] [/Q] [/U] [/F:size] [/B | /S]
```

```
Format drive: [/V[:label]] [/Q] [/U] [/T:tracks
/N:sectors] [/B | /S]
```

```
Format drive: [/V[:label]] [/Q] [/U] [/1] [/4] [/B | /S]
```

```
Format drive: [/Q] [/U] [/1] [/4] [/8] [/B | /S]
```

*/V[:label]* Specifies the volume label.

*/Q* Performs a quick format.

*/U* Performs an unconditional format.

*/F:size* Specifies the size of the floppy disk to format (such as 160, 180, 320, 360, 720, 1.2, 1.44, 2.88).

- /B** Allocates space on the formatted disk for system files.
- /S** Copies system files to the formatted disk.
- /T:tracks** Specifies the number of tracks per disk side.
- /N:sectors** Specifies the number of sectors per track.
- /1** Formats a single side of a floppy disk.
- /4** Formats a 5.25-inch 360K floppy disk in a high-density drive.
- /8** Formats eight sectors per track.

## GOTO

Directs MS-DOS to a labeled line in a batch program.

```
Goto label
```

*label* Specifies a text string used in the batch program as a label.

You type a label on a line by itself, beginning with a colon.

## GRAFTABL

Enables MS-DOS to display an extended character set in graphics mode.

```
Graftabl [xxx]
```

```
Graftabl /STATUS
```

*xxx* Specifies a code page number.

**/STATUS** Displays the current code page selected for use with **graftabl**.

## GRAPHICS

Loads a program that can print graphics.

```
Graphics [type] [[drive:][path]filename] [/R] [/B]  
[/LCD] [/PRINTBOX:STD | /PRINTBOX:LCD]
```

*type* Specifies a printer type.

[*drive:*][*path*]*filename* Specifies the file containing information on supported printers.

/R Prints white on black as seen on the screen.

/B Prints the background in color for COLOR4 and COLOR8 printers.

/LCD Prints using LCD aspect ratio.

/PRINTBOX:STD | /PRINTBOX:LCD Specifies the print-box size, either STD or LCD.

## HELP

Provides help information for MS-DOS commands.

```
Help [command]
```

*command* Displays help information on that command.

## IF

Performs conditional processing in batch programs.

**If [NOT] ERRORLEVEL** *number command*

**If [NOT]** *string1==string2 command*

**If [NOT] EXIST** *filename command*



**NOT** Specifies that MS-DOS should carry out the command only if the condition is false.

**ERRORLEVEL** *number* Specifies a true condition if the last program run returned an exit code equal to or greater than the number specified.

*command* Specifies the command to carry out if the condition is met.

*string1*==*string2* Specifies a true condition if the specified text strings match.

**EXIST** *filename* Specifies a true condition if the specified filename exists.

## INTERLNK

Add the *interlnk.exe* device driver to the *config.sys* file to redirect requests for operations on one or more Interlnk client drives or printer ports to one or more drives or printer ports on the Interlnk server.

```
device=[drive:][path]interlink.exe [/drives:n]
[/noprinter] [/com[:][n/address]]
[/lpt[:][n/address]] [/auto] [/noscan] [/low]
[/baud:rate] [/v]
```

[drive:][path] Specifies the location of the *interlnk.exe* file.

**/drives:n** Specifies the number of redirected drives. The default is 3. If you specify 0, Interlnk redirects only printers.

**/noprinter** Specifies that printers not be redirected when you install *interlnk.exe*.

**/com[:][n/address]** Specifies a serial port. The *n* parameter specifies the number of the serial port. The *address* parameter specifies the address of the serial port.

**/lpt[:][n/address]** Specifies a parallel port. The *n* parameter specifies the number of the LPT port. The *address* parameter specifies the address of the LPT port.

**/auto** Installs the *interlnk.exe* device driver in memory only if the client can establish a connection with the server when the client starts up.

- /noscan** Installs the *interlnk.exe* device driver in memory, but prevents establishing a connection between client and server.
- /low** Loads the *interlnk.exe* device driver into conventional memory, even if the upper memory is available.
- /baud:rate** Sets a maximum baud rate for serial communication. Valid values for *rate* are 9600, 19200, 38400, 57600, and 115200. The default is 115200.
- /v** Prevents conflicts with a computer's timer. Specify this switch if you have a serial connection between computers and one of them stops running when you use Interlnk to access a drive or printer port.

## INTERSVR

Provides serial or parallel file transfer capabilities via redirected drives.

```
Intersvr [drive:[...]] [/X=drive:[...]] [/LPT[:][n |
address]] [/COM[:][n | address]] [/BAUD:rate] [/B]
```

*drive*: Specifies the drive(s) to redirect. (By default, all drivers are redirected.)

**/X=drive**: Specifies the drive(s) to exclude.

**/LPT**[*n*] Specifies a port to scan. (**/LPT** scans all LPT ports.)

**/LPT**[*address*] Specifies a port address to scan.

**/COM**[*n*] Specifies a port to scan.

**/COM**[*address*] Specifies a port address to scan.

**/BAUD:rate** Sets a maximum serial baud rate.

**/B** Displays the Interlnk server screen in black and white.

**/V** Prevents conflicts with a computer's timer. Specify this switch if you have a serial connection between computers and one of them stops running when you use Interlnk.

**Intersvr /RCOPY** Copies Interlnk files from one computer to another, provided that the computer's serial ports are connected with a 7-wire null-modem cable.

## JOIN

Joins a disk drive to a directory on another drive.

```
Join [drive1: [drive2:]path]
```

```
Join drive1: /D
```

*drive1:* Specifies a disk drive that will appear as a directory on *drive2*.

*drive2:* Specifies a drive to which you want to join *drive1*.

*path* Specifies the directory to which you want to join *drive1*. It must be empty and cannot be the root directory.

**/D** Cancels any previous **join** commands for the specified drive.

Type **join** without parameters to list currently joined drives.

## KEYB

Configures a keyboard for a specific language.

```
Keyb [xx[, [yyy][, [drive:] [path] filename]]] [/E]
[/ID:nnn]
```

*xx* Specifies a two-letter keyboard code.

*yyy* Specifies the code page for the character set.

*[drive:] [path] filename* Specifies the keyboard definition file.

**/E** Specifies that an enhanced keyboard is installed.

**/ID:*mmm*** Specifies the keyboard in use.

## LABEL

Creates, changes, or deletes the volume label of a disk.

```
Label [drive:][label]
```

## LOADFIX

Loads a program above the first 64 kB of memory, and runs the program.

```
Loadfix [drive:][path]filename
```

Use **loadfix** to load a program if you have received the message "Packed file corrupt" when trying to load the program in low memory.

## LOADHIGH

Loads a program into the upper memory area.

```
Loadhigh [drive:][path]filename [parameters]
```

```
Lh [drive:][path]filename [parameters]
```

*parameters* Specifies any command-line information required by the program you want to load.

## MD

Creates a directory.

```
Mkdir [drive:]path
```

```
Md [drive:]path
```

## MEM

Displays the amount of used and free memory in your system.

```
Mem [/PROGRAM | /DEBUG | /CLASSIFY]
```

**/PROGRAM** or **/P** Displays status of programs currently loaded in memory.

**/DEBUG** or **/D** Displays status of programs, internal drivers, and other information.

**/CLASSIFY** or **/C** Classifies programs by memory usage. Lists the size of programs, provides a summary of memory in use, and lists largest memory block available.

## MIRROR

Records information about one or more disks.

```
Mirror [drive:[ ...]] [/1] [/Tdrive[-entries][ ...]]
```

```
Mirror [/U]
```

**Mirror** [/PARTN]

*drive:* Specifies the drive for which you want to save information.

**/1** Saves only the latest disk information (does not back up previous information).

**/Tdrive** Loads the deletion-tracking program for the specified drive.

- entries* Specifies maximum number of entries in the deletion-tracking file.
- /U* Unloads the deletion-tracking program.
- /PARTN* Saves hard disk partition information to a floppy disk.

## MKDIR

Creates a directory.

```
Mkdir [drive:]path
```

```
Md [drive:]path
```

## MODE

Configures system devices.

### Printer Port

```
MODE LPTn[:] [COLS=c] [LINES=l] [RETRY=r]
```

### Serial Port

```
MODE COMm[:] [BAUD=b] [PARITY=p] [DATA=d] [STOP=s]  
[RETRY=r]
```

### Device Status

```
MODE [device] [/STATUS]
```

### Redirect Printing

```
MODE LPTn[:]=COMm[:]
```

### Prepare Code Page

```
MODE device CP PREPARE=((yyy[...])  
[drive:] [path] filename)
```

## MOUSE

Displays information about the mouse driver and tells you the installation status of the driver. The following switches let you change the status:

- /1**            Instructs the computer to check the COM1 port for a mouse.
- /2**            Instructs the computer to check the COM2 port for a mouse.
- out**           Removes the mouse driver from memory if possible.

## MOUSECON

Lets you adjust the mouse sensitivity while you run an application program. After you install the mouse driver, type **mousecon**. Then, press **Ctrl-Alt**-left mouse button to display the mouse control panel.

## NLSFUNC

Loads country-specific information.

```
Nlsfunc [[drive:][path]filename]
```

*[drive:][path]filename* Specifies the file containing country-specific information.

## PATH

Displays or sets a search path for executable files.

```
Path [[drive:]path[;...]]
```

```
Path ;
```

Type **path ;** to clear all search-path settings and direct MS-DOS to search only in the current directory.

Type **path** without parameters to display the current path.

## PAUSE

Suspends processing of a batch program and displays the message "Press any key to continue...."

**Pause**

## PRINT

Prints a text file while you are using other MS-DOS commands.

```
Print [/D:device] [/B:size] [/U:ticks1] [/M:ticks2]  
[/S:ticks3] [/Q:qsize] [/T]  
[[drive:][path]filename[...]] [/C] [/P]
```

**/D:device** Specifies a print device.

**/B:size** Sets the internal buffer size, in bytes.

**/U:ticks1** Waits the specified maximum number of clock ticks for the printer to be available.

**/M:ticks2** Specifies the maximum number of clock ticks it takes to print a character.

**/S:ticks3** Allocates the scheduler the specified number of clock ticks for background printing.

**/Q:qsize** Specifies the maximum number of files allowed in the print queue.

**/T** Removes all files from the print queue.

**/C** Cancels printing of the preceding filename and subsequent filenames.

**/P** Adds the preceding filename and subsequent filenames to the print queue.

Type **print** without parameters to display the contents of the print queue.



## PROMPT

Changes the MS-DOS command prompt.

```
Prompt [text]
```

*text* Specifies a new command prompt. Prompt can be made up of normal characters and the following special codes:

<b>\$Q</b>	= (equal sign)
<b>\$\$</b>	\$ (dollar sign)
<b>\$T</b>	Current time
<b>\$D</b>	Current date
<b>\$P</b>	Current drive and path
<b>\$V</b>	MS-DOS version number
<b>\$N</b>	Current drive
<b>\$G</b>	(greater-than sign)
<b>\$L</b>	(less-than sign)
<b>\$B</b>	(pipe)
<b>\$H</b>	Backspace (erases previous character)
<b>\$E</b>	Escape code (ASCII code 27)
<b>\$_</b>	Carriage return and newline

Type **prompt** without parameters to reset the prompt to the default setting.

## QBASIC

Starts the MS-DOS QBasic programming environment.

```
Qbasic [/B] [/EDITOR] [/G] [/H] [/MBF] [/NOHI]  
[[/RUN] [drive:] [path] filename]
```

- /B** Allows use of a monochrome monitor with a color graphics card.
- /EDITOR** Starts the MS-DOS Editor.
- /G** Provides the fastest update of a CGA screen.
- /H** Displays the maximum number of lines possible for your hardware.

**/MBF** Converts the built-in functions MKS\$, MKD\$, CVS, and CVD to MKSMBF\$, MKDMBF\$, CVSMBF, and CVDMBF, respectively.

**/NOHI** Allows the use of a monitor without high-intensity support.

**/RUN** Runs the specified Basic program before displaying it.

`[[drive:][path]filename]` Specifies the program file to load or run.

## RD

Removes (deletes) a directory.

```
Rmdir [drive:]path
```

```
Rd [drive:]path
```

## RECOVER

Recovers readable information from a bad or defective disk.

```
Recover [drive:][path]filename
```

```
Recover drive:
```

## REM

Records comments (remarks) in a batch file or *config.sys*.

```
Rem [comment]
```

## RENAME

Renames a file or files.

```
Rename [drive:][path]filename1 filename2
```

```
Ren [drive:][path]filename1 filename2
```

Note that you cannot specify a new drive or path for your destination file.

## REPLACE

Replaces files.

```
Replace [drive1:][path1]filename [drive2:][path2]  
[/A] [/P] [/R] [/W]
```

```
Replace [drive1:][path1]filename [drive2:][path2]  
[/P] [/R] [/S] [/W] [/U]
```

[*drive1:*][*path1*]*filename* Specifies the source file or files.

[*drive2:*][*path2*] Specifies the directory where files are to be replaced.

- /A** Adds new files to destination directory. Cannot use with **/S** or **/U** switches.
- /P** Prompts for confirmation before replacing a file or adding a source file.
- /R** Replaces read-only files as well as unprotected files.
- /S** Replaces files in all subdirectories of the destination directory. Cannot use with the **/A** switch.
- /W** Waits for you to insert a disk before beginning.
- /U** Replaces (updates) only files that are older than source files. Cannot use with the **/A** switch.

## RESTORE

Restores files that were backed up using the **backup** command.

```
Restore drive1: drive2:[path[filename]] [/S] [/P]  
[/B:date] [/A:date] [/E:time] [/L:time] [/M] [/N]  
[/D]
```

*drive1:* Specifies the drive where the backup files are stored.

*drive2:[path[filename]]* Specifies the file(s) to restore.

- /S Restores files in all subdirectories in the path.
- /P Prompts before restoring read-only files or files changed since the last backup (if appropriate attributes are set).
- /B Restores only files last changed on or before the specified date.
- /A Restores only files changed on or after the specified date.
- /E Restores only files last changed at or earlier than the specified time.
- /L Restores only files changed at or later than the specified time.
- /M Restores only files changed since the last backup.
- /N Restores only files that no longer exist on the destination disk.
- /D Displays files on the backup disk that match specifications.

## RMDIR

Removes (deletes) a directory.

```
Rmdir [drive:]path
```

```
Rd [drive:]path
```

## SET

Displays, sets, or removes MS-DOS environment variables.

```
Set [variable=[string]]
```

*variable* Specifies the environment-variable name.

*string* Specifies a series of characters to assign to the variable.

Type **set** without parameters to display the current environment variables.

## SETVER

Sets the version number that MS-DOS reports to a program.

### Display Current Version Table

```
Setver [drive:path]
```

### Add Entry

```
Setver [drive:path] filename n.nn
```

### Delete Entry

```
Setver [drive:path] filename /DELETE [/QUIET]
```

[*drive:path*] Specifies location of the *setver.exe* file.

*filename* Specifies the filename of the program.

*n.nn* Specifies the MS-DOS version to be reported to the program.

**/DELETE** or **/D** Deletes the version-table entry for the specified program.

**/QUIET** Hides the message typically displayed during deletion of version-table entry.

## SHARE

Installs file-sharing and locking capabilities on your hard disk.

```
Share [/F:space] [/L:locks]
```

*/F:space* Allocates file space (in bytes) for file-sharing information.

*/L:locks* Sets the number of files that can be locked at one time.

## SHIFT

Changes the position of replaceable parameters in a batch file.

```
Shift
```

## SORT

Sorts input and writes results to the screen, a file, or another device.

```
Sort [/R] [/+n] [drive1:][path1]filename1  
[[drive2:][path2]filename2]
```

```
[command |] Sort [/R] [/+n]  
[>[drive2:][path2]filename2]
```

*/R* Reverses the sort order; that is, sorts Z to A, then 9 to 0.

*/+n* Sorts the file according to characters in column *n*.

*[drive1:][path1]filename1* Specifies a file to be sorted.

*[drive2:][path2]filename2* Specifies a file where the sorted input is to be stored.

*command* Specifies a command whose output is to be sorted.

## SUBST

Associates a path with a drive letter.

```
Subst [drive1: [drive2:]path]
```

```
Subst drive1: /D
```

*drive1:* Specifies a virtual drive to which you want to assign a path.

*[drive2:]path* Specifies a physical drive and path you want to assign to a virtual drive.

*/D* Deletes a substituted (virtual) drive.

Type **subst** with no parameters to display a list of current virtual drives.

## SYS

Copies MS-DOS system files and command interpreter to a disk you specify.

```
Sys [drive1:][path] drive2:
```

*[drive1:][path]* Specifies the location of the system files.

*drive2:* Specifies the drive the files are to be copied to.

## TIME

Displays or sets the system time.

```
Time [time]
```

Type **time** with no parameters to display the current time setting and a prompt for a new one.

Press **Enter** to keep the same time.

## TREE

Graphically displays the directory structure of a drive or path.

```
Tree [drive:][path] [/F] [/A]
```

**/F** Displays the names of the files in each directory.

**/A** Uses ASCII instead of extended characters.

## TYPE

Displays the contents of a text file.

```
Type [drive:][path]filename
```

## UNDELETE

Restores files which have been deleted.

```
Undelete [[drive:][path]][filename] [/LIST | /ALL]  
[/DT | /DOS]
```

**/LIST** Lists the deleted files available to be recovered.

**/ALL** Undeletes all specified files without prompting.

**/DT** Uses only the deletion-tracking file.

**/DOS** Uses only the MS-DOS directory.



## UNFORMAT

Restores a disk erased by the **format** command or restructured by the **recover** command.

```
Unformat drive: [/J]
```

```
Unformat drive: [/U] [/L] [/TEST] [/P]
```

```
Unformat /PARTN [/L]
```

*drive:* Specifies the drive to unformat.

**/J** Verifies that the mirror files agree with the system information on the disk.

**/U** Unformats without using MIRROR files.

**/L** Lists all file and directory names found, or, when used with the **/PARTN** switch, displays current partition tables.

**/TEST** Displays data but does not write changes to disk.

**/P** Sends output messages to printer connected to LPT1.

**/PARTN** Restores disk partition tables.

## VER

Displays the MS-DOS version.

## VERIFY

Tells MS-DOS whether to verify that your files are written correctly to a disk.

```
Verify [ON | OFF]
```

## VOL

Displays the disk volume label and serial number, if they exist.

```
Vol [drive:]
```

## XCOPY

Copies files (except hidden and system files) and directory trees.

```
Xcopy source [destination] [/A | /M] [/D:date] [/P]  
[/S [/E]] [/V] [/W]
```

*source* Specifies the file(s) to copy.

*destination* Specifies the location and/or name of new files.

**/A** Copies files with the archive attribute set, doesn't change the attribute.

**/M** Copies files with the archive attribute set, turns off the archive attribute.

**/D:date** Copies files changed on or after the specified date.

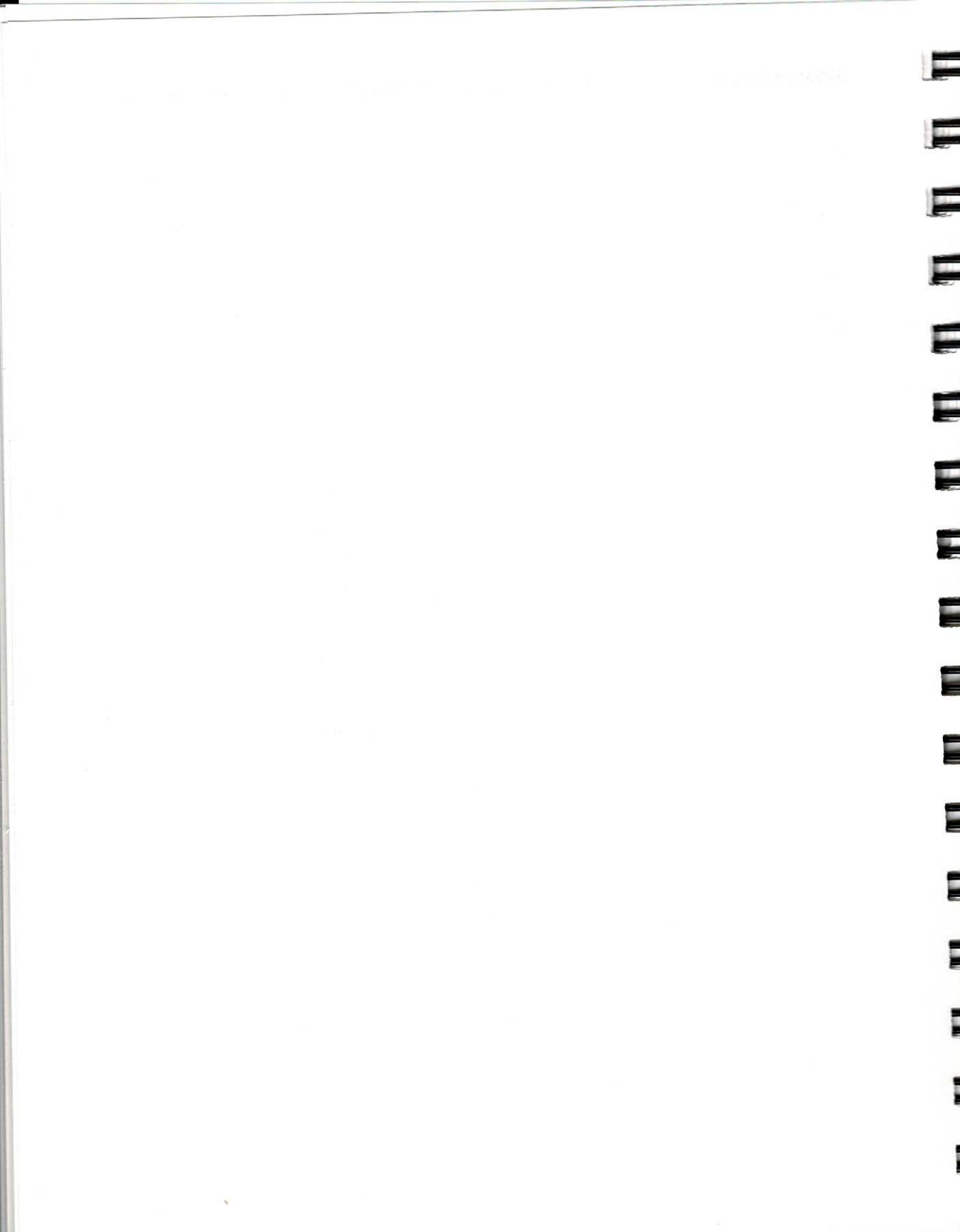
**/P** Prompts you before creating each destination file.

**/S** Copies directories and subdirectories except empty ones.

**/E** Copies any subdirectories, even if empty.

**/V** Verifies each new file.

**/W** Prompts you to press a key before copying.



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## CHAPTER 9: UTILITY PROGRAMS

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This chapter describes and explains how to use the utility programs that are available for the GRiD Convertible computer. These programs are available in the *gridutil* directory on the hard disk and on the GRiD Model 2260 Utilities and Diagnostics diskette.

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### Executive Menu

Executive Menu is a simple program that displays a menu of the other GRiD Convertible utility programs, as shown in Figure 9-1. You can start any of the other utility programs by selecting it from the menu.

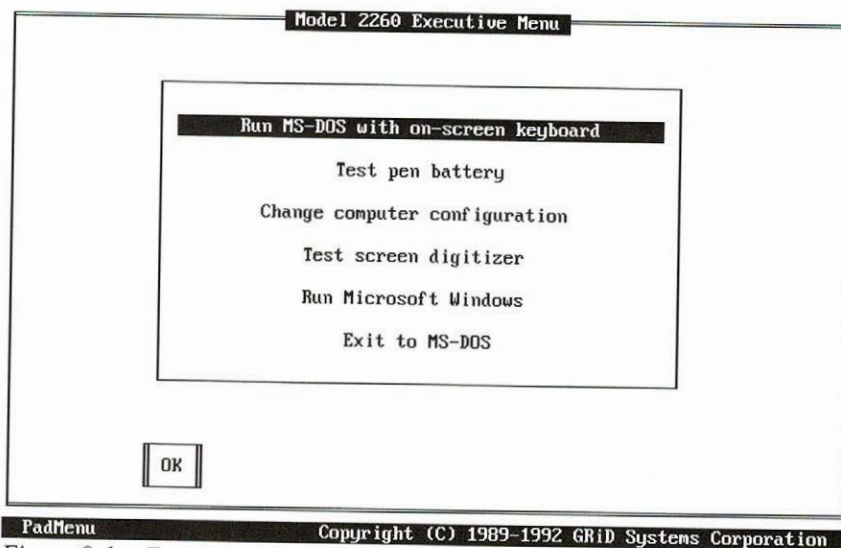


Figure 9-1. Executive Menu

## Starting Executive Menu

To start Executive Menu, run the program **padmenu**. To do this automatically each time you start your computer, include the command **c:\gridutil\padmenu** in your *autoexec.bat* file. You also return to Executive Menu whenever you exit Windows for Pen Computing (if you use the default *autoexec.bat* file).

## Using Executive Menu

To start one of the functions listed in Executive Menu, touch the pen to the function you want to pick. This moves the highlight bar to that function. Then touch the pen to the OK button. This starts the function you have chosen. As a shortcut, you can double tap on the function you want; in this case you do not need to touch the OK button. (To double tap, you tap twice very quickly.)

**NOTE:** The term button, above, refers to a small box on the screen labelled with text. Such screen buttons cause specific actions when they are touched with the pen. The term button is also used in this manual to refer to the standby button below the computer screen.

To "touch" with the pen means to tap quickly on a spot on the screen. Tap quickly enough so that the pen contacts the screen only momentarily, like striking a key on a keyboard. Be sure to make good contact with the screen, but do not leave the pen down on the screen.

If you are using the keyboard, the up and down arrow keys move the highlight up and down. Pressing the **Enter** key is the same as touching the OK button.

When the function you have chosen from Executive Menu is finished, Executive Menu is displayed again.

Each of the items listed in Executive Menu is described in Table 9-1.

*Table 9-1. Executive Menu Items*

<b>Menu Item</b>	<b>Description</b>
Run MS-DOS with on-screen keyboard	Starts Screen Keyboard, allowing you to run programs that require a keyboard without using the physical one. Refer to the section Screen Keyboard, beginning on page 9-4, for more information.
Test pen battery	Determines whether the batteries in the pen are ok or low.
Change configuration	Starts the full-screen configurator. Refer to the section Configurator, beginning on page 9-7, for more information.
Test digitizer	Starts the PenDraw program. This program allows you to test the screen digitizer. Refer to the section Testing the Screen Digitizer, beginning on page 9-26, for more information.
Run Microsoft Windows	Starts Microsoft Windows for Pen Computing.
Exit to MS-DOS	Exits from Executive Menu to MS-DOS.

## Screen Keyboard

Screen Keyboard is a versatile program that emulates a physical IBM AT-compatible keyboard on the GRiD Convertible computer screen. It allows you to enter keyboard data without accessing the physical keyboard.

For example, you can use the screen keyboard program to operate most “off-the-shelf” MS-DOS programs that use text-mode and expect keyboard input, since such programs do not take handwriting input from the pen. Or, you can use it to type MS-DOS commands.

You need to use Screen Keyboard only if you want to give MS-DOS commands or run MS-DOS application programs without opening the computer to access the keyboard. You do not need Screen Keyboard if you use the keyboard or if you use Windows or PenRight! application programs designed to take input from the pen.

Screen Keyboard works by displaying a picture of a keyboard in the lower half of the GRiD Convertible screen, as shown in Figure 9-2. MS-DOS runs in the top half of the screen, which contains the standard 25 lines by 80 characters per line. You “type” on the keyboard by touching the keys with the pen. The keys you type are passed directly to MS-DOS, as if you had typed them on a real keyboard.

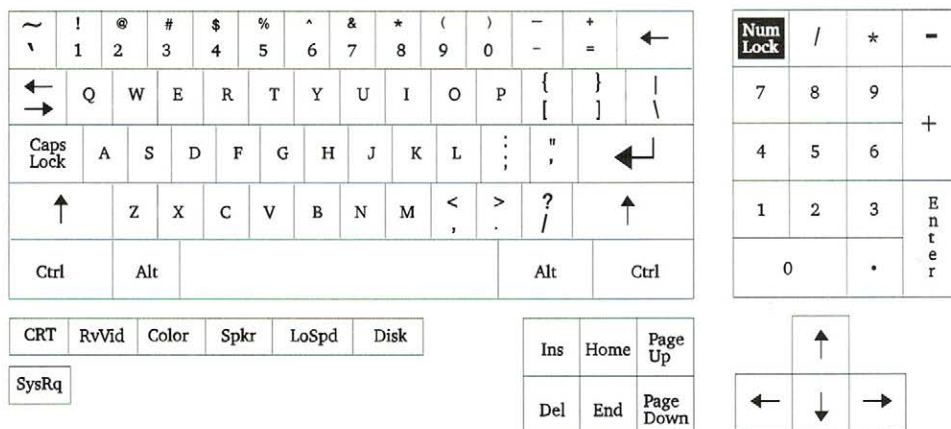


Figure 9-2. Screen Keyboard (U.S.)

## Starting Screen Keyboard

There are two methods for starting Screen Keyboard:

- Choose “Run MS-DOS with on-screen keyboard” from the Executive Menu. This method works best if you occasionally need to use Screen Keyboard.
- Run the program **padkbd**. To do this automatically each time you start your computer, include the command **c:padkbd** in your *autoexec.bat* file.

When Screen Keyboard starts, it splits the screen in half and displays a keyboard in the lower half.

Screen Keyboard is a Terminate-and-Stay-Resident program (TSR). It stays in memory at the same time that you are using MS-DOS or running an application program.

## Features and Limitations

Screen Keyboard has the following features:

- The upper half of the screen is a standard 640- by 200-pixel CGA screen. Almost any MS-DOS application that can use a CGA screen in text mode can run there.
- In the lower half of the screen, the Screen Keyboard includes all of the keys found on a standard IBM AT-compatible keyboard. When a key is touched, it is briefly highlighted, unless it is a locking or modifying key.
- The locking keys, **CapsLock**, **NumLock**, and **ScrlLock**, stay highlighted and modify other keys until they are touched a second time to turn them off.
- The modifying keys, **Shift**, **Ctrl**, and **Alt**, work differently. First touch the modifying key (it stays highlighted), then touch a second key, and the modifying key returns to normal. For example, to type a capital B, touch **Shift**, then touch **B**. If you accidentally touch one of the modifying keys, touch it again to turn the highlight off.
- When the **NumLock** key is touched, the numeric keypad keys are shown on the keys below it (at the right side of the screen). When **NumLock** is off, the direction keys are displayed in that area.
- The **Alt** key works specially in combination with the numeric keypad. If you touch **Alt**, it normally modifies only the key that immediately follows it. But if you use the numeric keypad, you can enter a two- or three-number ASCII code following **Alt**. For example, **Alt-156** causes the British pound sign (£) to be displayed.

In this way, you can enter extended character ASCII codes the same as on a real keyboard. (Extended character ASCII codes include foreign characters and line draw characters, which some application programs use.)

- If you touch the pen to a key and hold it there, the key repeats.



- Screen Keyboard does not interfere with the physical keyboard. Both keyboards can be used interchangeably. However, if you use the locking keys, **CapsLock**, **NumLock**, and **ScrLk**, interchangeably on both Screen Keyboard and the physical keyboard, the indicators for these keys may not reflect their actual settings.

Screen Keyboard has the following two limitations:

- Only character-mode MS-DOS applications are supported; if an application changes the screen to graphics mode, Screen Keyboard will not be visible.
- MS-DOS applications that use the second page (page 1) of video memory will interfere with Screen Keyboard and are not supported. Most character-mode applications do not do this and will run properly.

**NOTE:** Screen Keyboard can be used to start *any* application, even if the application then interferes with Screen Keyboard operation. For example, you could use Screen Keyboard to start a graphics application program that requires no further input from you, so it does not matter that the Screen Keyboard disappears when the application is started.

## Removing Screen Keyboard

If you started Screen Keyboard from Executive Menu, you can remove it and return to Executive Menu by giving the **exit** command. To do this, type the command **exit** and press **Enter**.

If you started Screen Keyboard by running the program **padkbd**, you can remove it by giving the command **padkbd /r** and pressing **Enter**.

---

## Test Pen Battery

Select this option to test the batteries in your pen. The instructions on the screen tell you to touch the pen to the display and then lift the pen. When you lift the pen, a message is issued telling you that the pen battery is OK or is low. If the pen batteries are low, you should change them as soon as possible. Refer to the section Changing the Pen Batteries on page 2-5.

You can also test your pen batteries by running the program **penbatt**, which is on your hard disk or on the MS-DOS Utilities and Diagnostics diskette.

---

## Configurator

The Configurator program allows you to change your computer configuration. The computer configuration includes such items as the device from which the system should start up, system power control, the screen brightness and other attributes, the device names for the serial port and optional modem, the speed of the microprocessor, and the status of the standby and autostandby modes.

The Configurator program can be used in either full-screen or command line mode. To use the full-screen configurator, select “Change configuration” from the Executive menu or enter the command **config** at the command line. The full-screen configurator main menu is displayed. The main menu has the following buttons:

- System Status—Lists information about the computer BIOS, keyboard, memory, and hard drive.
- Power Settings—Displays the Power Settings Menu and lets you set various power control options.
- Peripheral Settings—Displays the Peripheral Settings Menu and lets you set the modem and the serial and parallel ports.
- System Settings—Displays the System Settings Menu and lets you change the boot sequence, processor speed, keyboard emulation, keyclick, and speaker.
- Video Settings—Displays the Video Settings Menu and lets you change various display features.
- Wakeup from Standby—Displays the Wakeup from Standby Menu and lets you establish how your computer wakes up from standby mode.

Figures 9-3 through 9-9 show the screens in the full-screen configurator. Table 9-2 lists the items that can be configured on each screen.

To use the full-screen configurator, touch the pen to the appropriate button. The menu for that section is displayed. The current values are highlighted. To change an option on the screen, touch the name of the item with the pen. Tap the setting button with the pen to select the new value. Holding the pen down on an arrow causes the values to cycle.

To use the full-screen configurator with the keyboard, use the **Tab** and **Shift-Tab** keys to move between the buttons. Use the ← and → keys to change the settings and the ↑ and ↓ keys to change the value for a setting.

You can also use the Configurator program from the MS-DOS command line. To issue Configurator commands from the command line, type **config** followed by the appropriate parameters. For convenience, you can include Configurator commands in batch files.

The settings of most configuration items are saved after the computer is turned off, but a few configuration items are reset each time the computer is started. Table 9-2 lists each of the Configurator items, notes whether it is saved or not, and gives the factory default setting for the command. If the command is saved after the computer is turned off, a plus sign (+) appears in the last column.

Each of the Configurator items is described in alphabetical order in the sections following Table 9-2. In the command line syntax statements, the vertical bar ( | ) is used to indicate a choice between two or more parameters. You should enter one of the parameters that are separated by vertical bars. Brackets [ ] are used to indicate optional parameters.

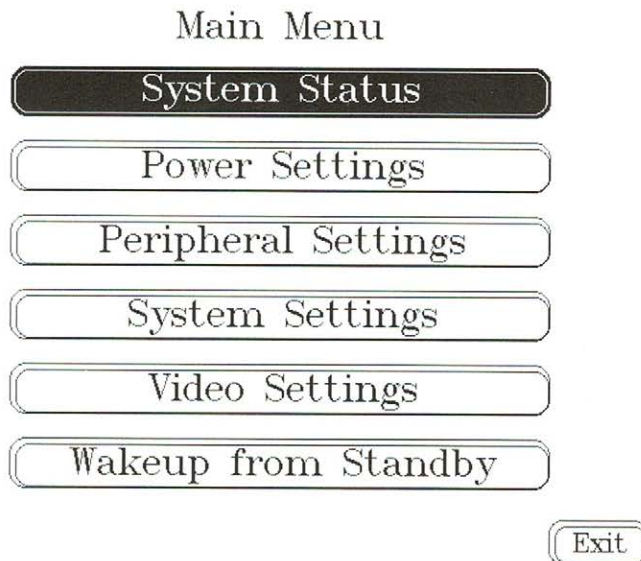


Figure 9-3. Configurator Main Menu

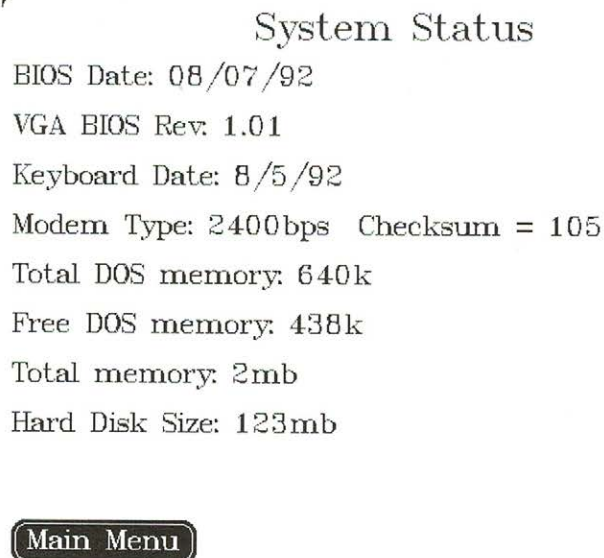


Figure 9-4. System Status Screen

## Power Settings

<b>Hard Disk Timeout</b>	No Timeout	↓ 20 ↑	minutes
Low Battery Alarm	Off	<b>On</b>	
Standby	Off	<b>On</b>	
Auto Standby	Off	↓ 05 ↑	minutes
Backlight	Off	<b>On</b>	↓ 17 ↑ minutes

**Main Menu**

Figure 9-5. Power Settings Menu

## Peripheral Settings

<b>Modem Port</b>	OFF	<b>COM1</b>	COM2
Serial Port	OFF	COM1	<b>COM2</b>
Serial pin settings	<b>Ring</b>	Barcode	
Parallel Port	Off	<b>LPT1</b>	LPT2

**Main Menu**

Figure 9-6. Peripheral Settings Menu

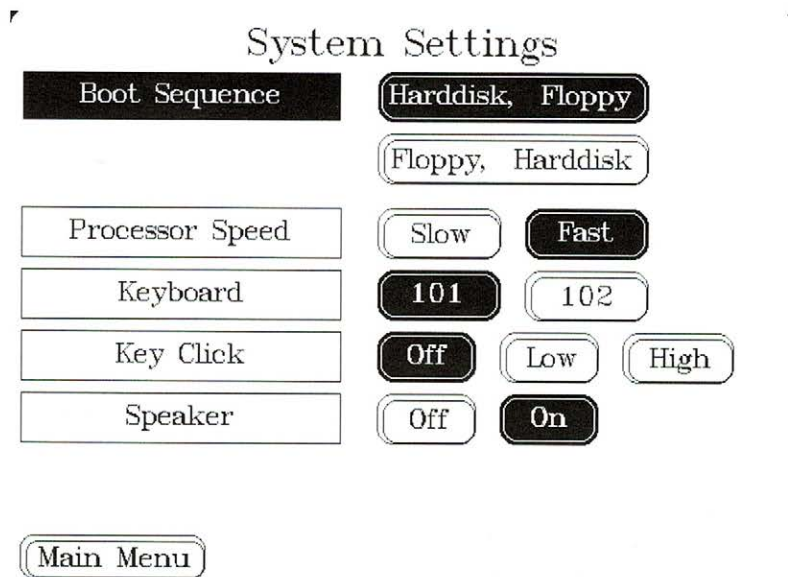


Figure 9-7. System Settings Menu

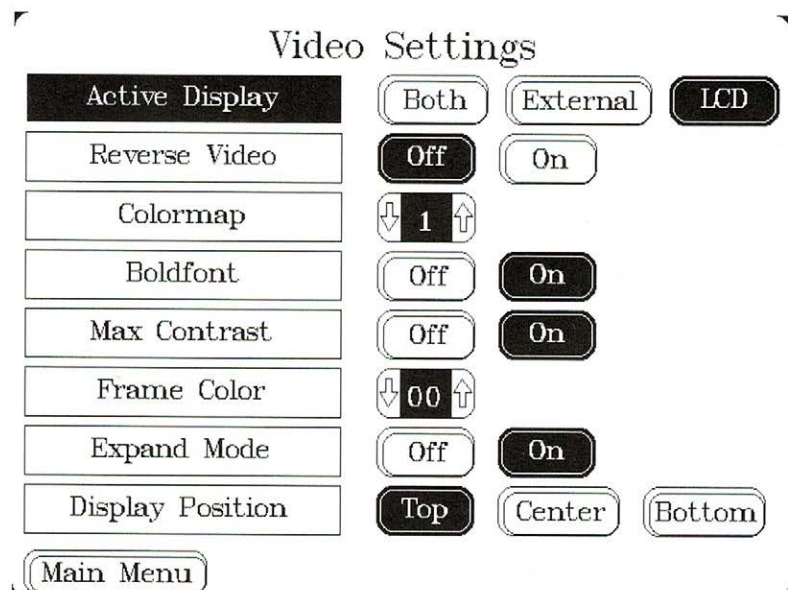
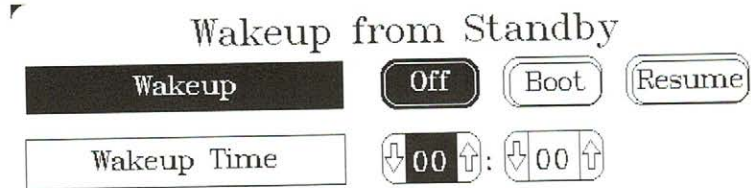


Figure 9-8. Video Settings Menu



**Main Menu**

Figure 9-9. Wakeup from Standby Menu