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Thank you for purchasing your Leading Edge Model "D" Personal Computer. We know you will enjoy it for many years to come.

Attached is the Operator's Guide for your Leading Edge Model "D" Personal Computer which includes you MS-DOS 2.11 and diagnostic diskettes.

If you have any technical questions while using your Model "D", please contact your dealer or our technical support toll-free Hotline at 800-343-6857.

Please fill out the coupon below and we will send you the following free of charge:

- \* Technical Reference Manual which includes more detailed technical and servicing information for the Model D.
- \* MS-DOS 2.11 Manual which includes information about the full functionality of the Disk Operating System (DOS) for the Model "D".
- \* Basic Manual which includes information about the Basic programming language.

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Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

Serial Number of System Unit \_\_\_\_\_

Please send the completed coupon to:

Leading Edge Hardware Products, Inc.  
225 Turnpike Street  
Canton, Massachusetts 02021  
1-800-343-6833  
Attn: Larry Sandberg

**Leading Edge Hardware Products, Inc.**

**Interim Guide To Operations**

**Model D**

First Edition: July, 1985  
Version 1.0

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**Leading Edge Model "D"**

**Guide To Operations**

## **FCC Radio Frequency Interference Statement**

**WARNING:** This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC rules. Only peripherals (computer Input/Output devices, terminals, printers, plotters, etc.) that are certified to comply with the Class B limits may be attached to this equipment. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

### **Instructions**

This equipment generates and uses radio frequency energy and if not installed and used according to the operating instructions, and all related manuals, it may cause interference to radio or television reception. This equipment has been tested and found to operate within the limits set forth for a Class B computing device under Subpart J of Part 15 of FCC Rules. These rules are intended to provide reasonable protection against such interference in a residential environment.

In the event this equipment does cause interference to radio or television reception (this can be determined by turning this equipment off and on), you are encouraged to try to correct the interference by one or more of the following measures:

- o Reorient the receiving antenna.
- o Relocate the equipment away from the receiver.
- o Relocate the equipment with respect to the receiver.
- o Plug the equipment into a different outlet so that equipment and receiver are on different circuits.
- o Ensure that all mounting screws, attachment connector screws, and ground wires are secured properly.
- o Ensure that card slot covers are in place if no card is mounted.

If necessary, refer this problem to the dealer from which you purchased your equipment. The dealer may have additional suggestions that can solve this problem.

First Printing - July, 1985

## **Preface**

This book gives you an introduction to the Leading Edge Model D. It includes information about setting up your computer, solving problems you may encounter, the options you may want to add to your computer, and instructions about moving your computer to a new location, and the technical specifications of your system.

Once your computer is operating properly, the section called Operations will help you use your new computer.

Even if you are an experienced computer user, you should review the material contained in Chapters 1 through 4, particularly Setting Up Your Computer and Operations. Beginners should carefully study each chapter of this guide before beginning to setup and use their Leading Edge Model D.

This interim guide book has six chapters and an appendix:

- Chapter 1**     **Introduction**, describes the components of your computer and some of the optional accessories you might add to your Leading Edge Model D.
- Chapter 2**     **Setting Up Your Computer**, contains information about placement, cabling, and performing the initial check of your system and its components. You will need to carefully refer to this chapter when you first set up your system and whenever you want to expand or change your setup.
- Chapter 3**     **Operations**, introduces you to the basics of using your new computer. For beginners and experienced computer users alike, this chapter contains the information you'll need to get up and running with your Leading Edge Model D. This chapter covers keyboard usage, MS-DOS, and GWBASIC, as well as how to start your computer.
- Chapter 4**     **Problem Determination Procedures**, covers the steps you must take to correct problems you may encounter from time to time during setup or normal use of your computer. If you ever have a problem, this is the chapter to refer to first. It contains step-by-step procedures for identifying the nature of a problem and the part of your system that is most likely at fault.

- Chapter 5**    **Using A Fixed Disk System**, is for users with a Model D system that has a fixed disk drive. It describes an easy setup procedure and some hints about easier use of a large storage disk.
- Chapter 6**    **Moving Your Computer**, gives you some hints on how to successfully repack and relocate your computer. Whenever you intend to move your Leading Edge Model D, you should review this chapter before beginning the procedure.
- Appendix A**    **Switch Settings**, describes the settings of the switch on your computers main processor board.

## Chapter 1 Introduction

Your new Leading Edge Model D is highly compatible with the complete range of IBM and IBM-compatible hardware and software. This lets you select the accessories and peripherals that meet your current needs, as well as prepare for future growth.

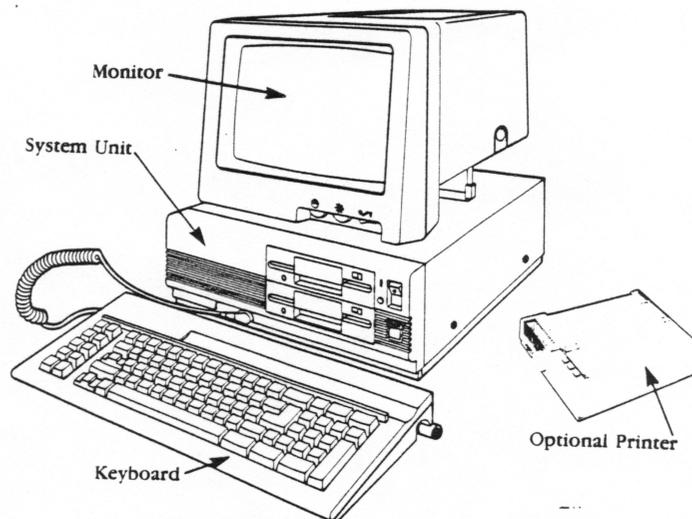
The System Unit is the heart of your computer. It is equipped with what Leading Edge Hardware Products, Inc. believes is the "minimum usable configuration". This means that you can be up and running right out of the box. Your computer is equipped with 256 Kb of random access memory (RAM) for program and work storage, a parallel I/O port for your choice of printer, a serial I/O port for either a printer or communications device, and two built-in 5-1/4 inch double-density, double-sided floppy disk drives. In addition, a 12 inch Monochrome Monitor and a detachable 83-key IBM-compatible keyboard is standard with your system.

The System Unit has four expansion slots. If you have a fixed disk drive, one of these slots is used by its controller. The others may be used for any combination of accessories you need for your business, education, or home applications. Cards made to operate in an IBM or IBM-compatible computer are likely to operate in your Leading Edge Model D.

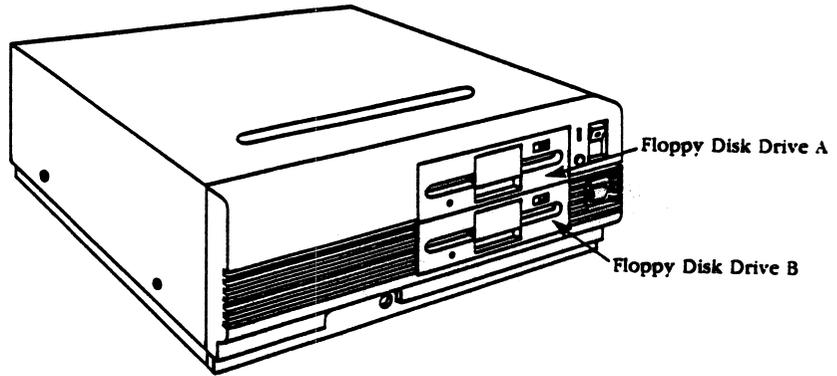
On the following pages in this chapter are examples showing some of the basic configurations and options you may want for your system. You may choose from the vast array of available options to set up your computer just the way you want it. Leading Edge Hardware Products also offers a choice of color graphics monitors and printers that work with your system right out of the box.

### Set Up Example

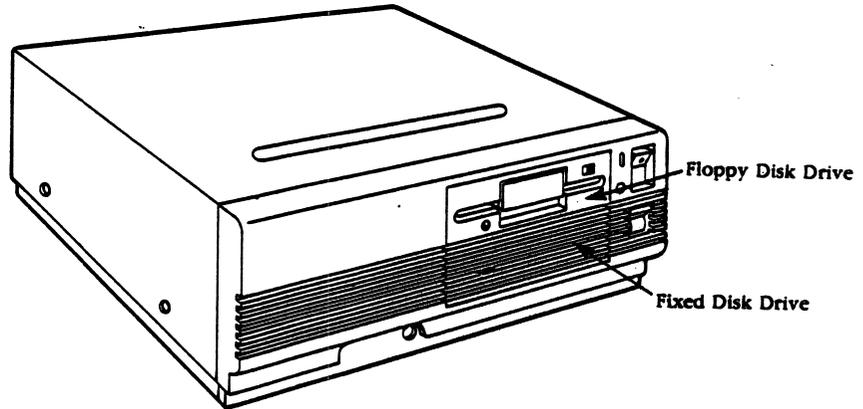
This is the standard configuration with an optional printer.



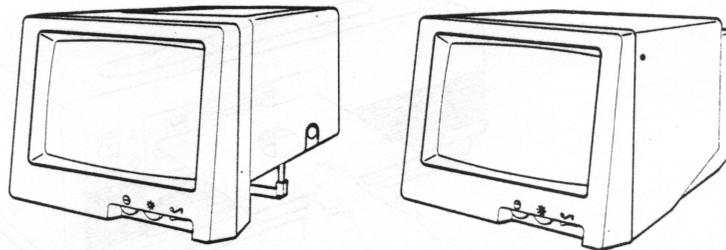
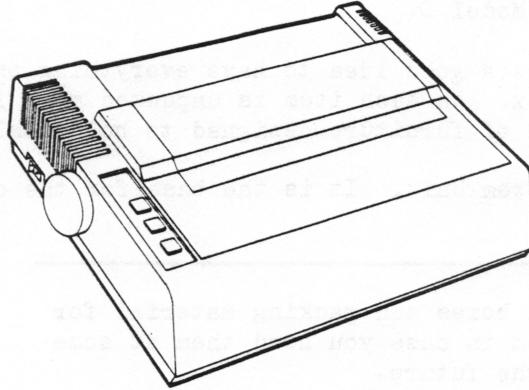
**Dual Floppy Disk System**



**Fixed Disk System**



## Optional Accessories and Peripherals



## Chapter 2 Setting Up

In this chapter you learn how to unpack and assemble the components of your Leading Edge Model D.

When you begin it's a good idea to have everything on the floor while you unpack each box. As each item is unpacked move it to a large table top or piece of furniture designed to hold small computers.

Start with the System Unit. It is the base for the display monitor.

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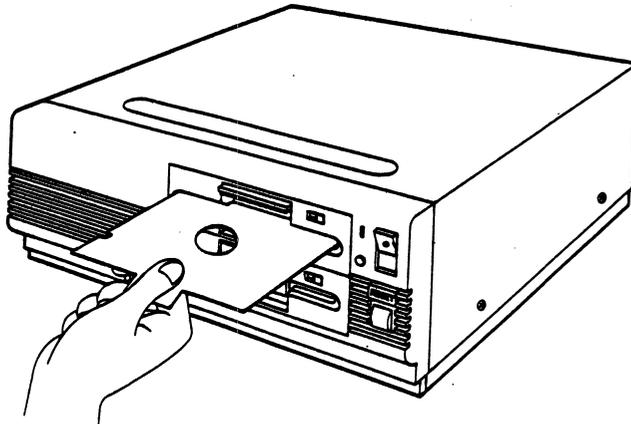
### Note:

Retain all boxes and packing material for your system in case you need them at some point in the future.

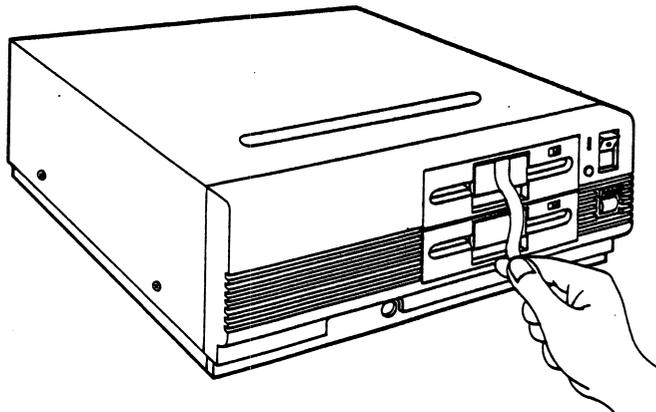
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### The System Unit

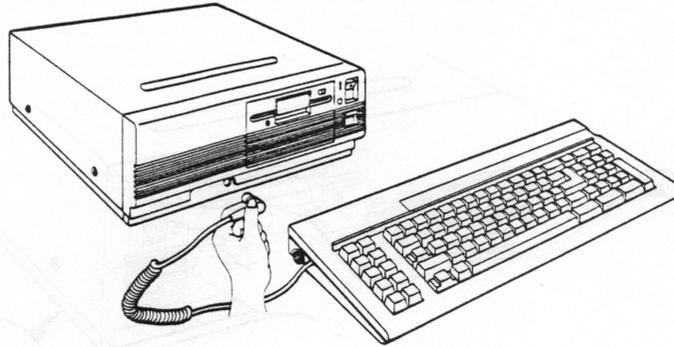
- (1) Remove shipping material from the disk drives.



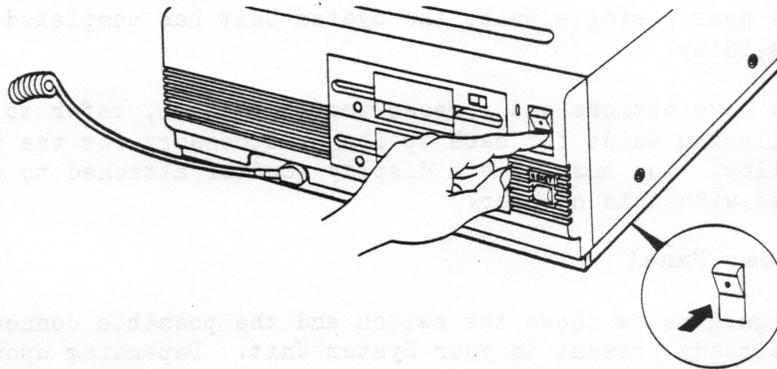
Remove tape



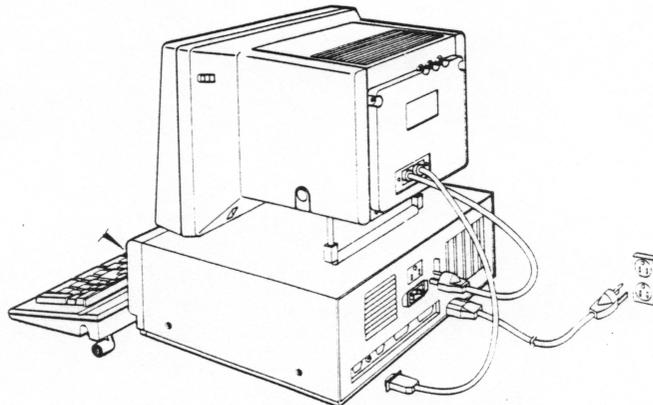
(2) Connect the keyboard.



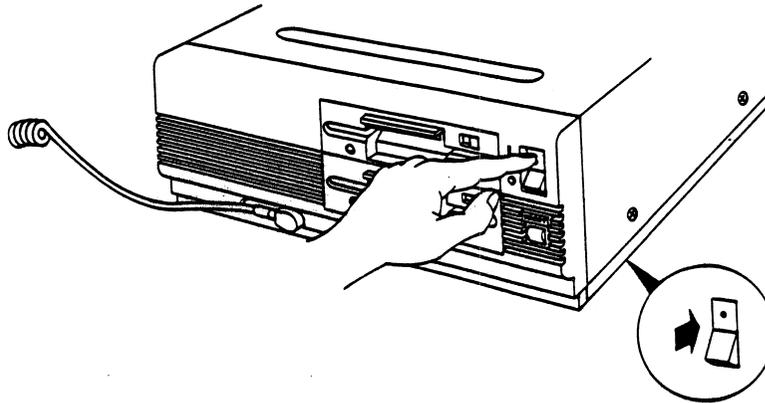
(3) Make sure the power switch is OFF.



(4) Connect the power cable to the System Unit and a wall outlet.



- (5) The first test: Press the power switch to the ON position.



If you hear a single beep, the System Unit has completed its self-test successfully.

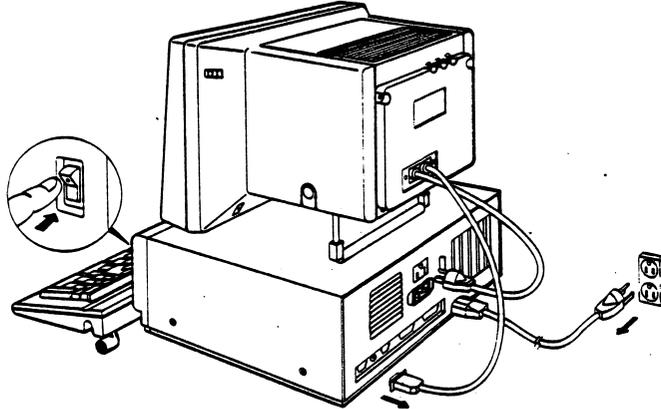
If you have options and accessories to install, refer to the Installation Guide for each option or accessory for the proper steps to follow. You must have a display monitor attached to your system to proceed with this chapter.

#### **The Rear Panel**

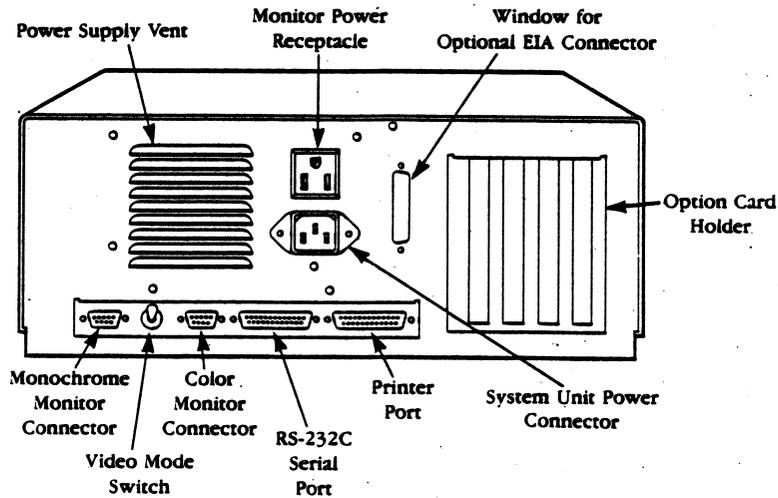
The figure below shows the switch and the possible connections you may have already present in your System Unit. Depending upon your selection of options, your rear panel may be configured in a different way.

## Connect Your Display Monitor

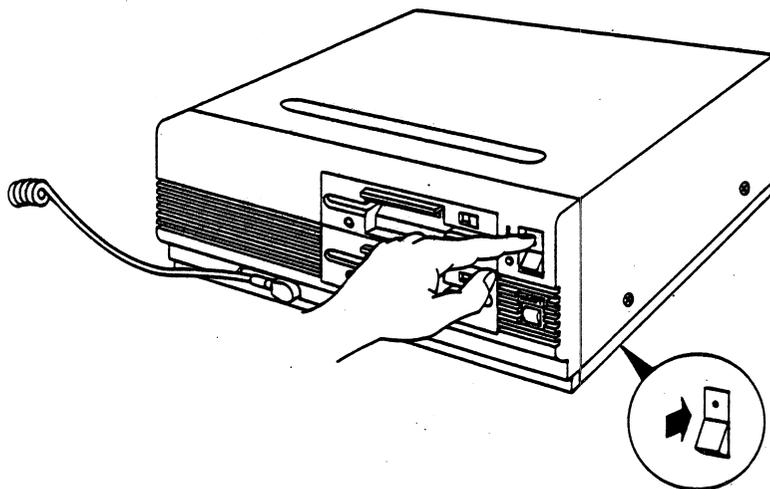
- (6) Attach the video cable from the rear of your display to the appropriate 9-pin connector on the rear panel of your System Unit. The connector from your monitor is labeled either COLOR or MONO. The connector fits when the label is up.



- (7) Connect the power cable from your monitor to the Monitor power receptacle.



(8) Press the power switch on the front of your monitor ON.



## Starting Your Computer

If you have a display monitor attached to your System Unit you can now proceed with the remaining steps in this chapter.

### System Unit Self-test

- (9) Press the power switch on the front of your System Unit ON. In a few seconds, depending upon how much memory is installed in your computer, a single beep is heard.

If you hear anything other than one beep, refer to Chapter 4, Problem Determination Procedures, for advice about identifying a possible problem.

Two other things will also happen:

- o In a few seconds the cursor appears on the screen.
- o The drive indicator light for drive A comes on.

After about 10 seconds, the message:

Bad or missing Command Interpreter

appears on the screen. This is normal and results from the System Unit attempting to read information from a diskette that is not present in drive A.

If nothing appears on the Monitor screen, adjust the brightness/contrast controls on the Monitor.

### (10) Finishing Setup

If every step has been successfully completed, your computer is ready to use. At this point you should finish installing and cabling any optional accessories or internal system boards before proceeding with the next chapter.

If you've encountered any problems, refer to Chapter 4 for further steps to follow.

## Chapter 3 Beginning Operations

This chapter of the Guide To Operations contains instructions that enable you to start using your Leading Edge Model D. Included are start up procedures, keyboard usage, and introductions to MS-DOS and GWBASIC.

### Getting Started

(1) Press the power switch on the front of your System Unit ON.

-----  
art: (dual floppy and fixed disk systems)

power On with finger

-----  
*art not available*

If you have a Leading Edge Model D equipped with a fixed disk, please refer to Chapter 5 for information about start-up procedures that may be different.

(2) After a few seconds the computer beeps once, and the following things happen:

- o The ROM BIOS message appears on the display screen.
- o Drive A indicator lamp lights showing that the computer is attempting to read the contents of a diskette that may be in the drive.

---

#### Note:

If anything else happens (e.g., more than one beep or no beeps at all, an error message appears on the display screen, etc.), follow these steps:

1. Turn the power switch to the OFF position.
2. Check all cable connections.
3. Check the power in the wall outlet.
4. Recable everything and start over.

If a problem persists, review Chapter 4, Problem Determination Procedures.

---

- (3) If you did not have a disk in Drive A when you performed step two, insert the MS-DOS Systems diskette into Drive A and close the Load Lever. Then press the System Reset button on the front of the System Unit.

-----  
art: insert disk

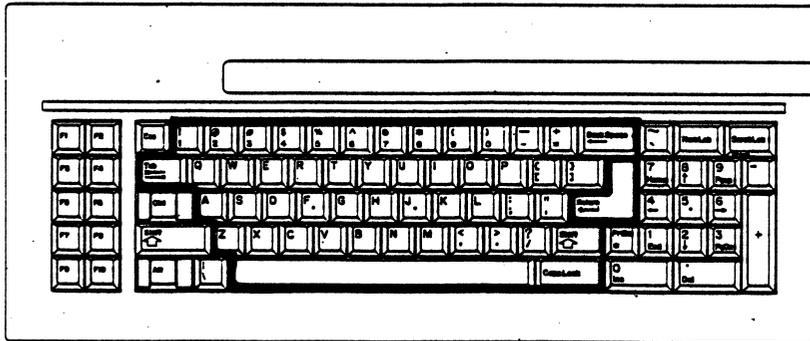
callout: Load Lever  
System Reset Button  
-----

- (4) When MS-DOS is loaded examine the display screen and adjust your display for maximum viewing comfort.

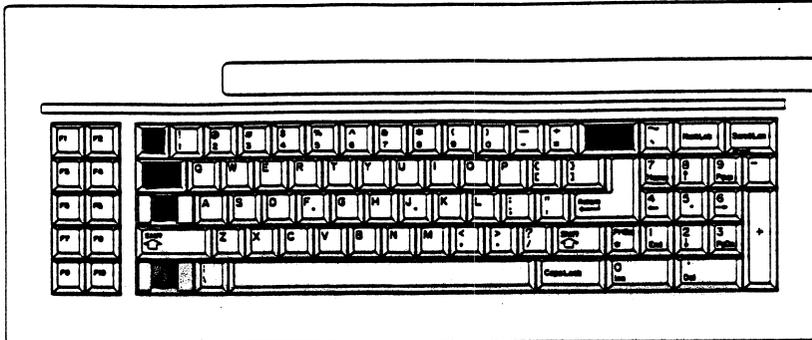
Your Leading Edge Model D is now ready to use.

### Keyboard

#### Using the Keyboard with GWBASIC

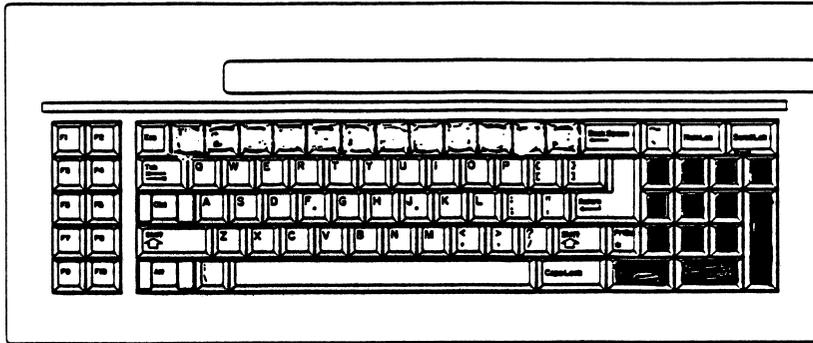


These keys are used in the same way as a typewriter.



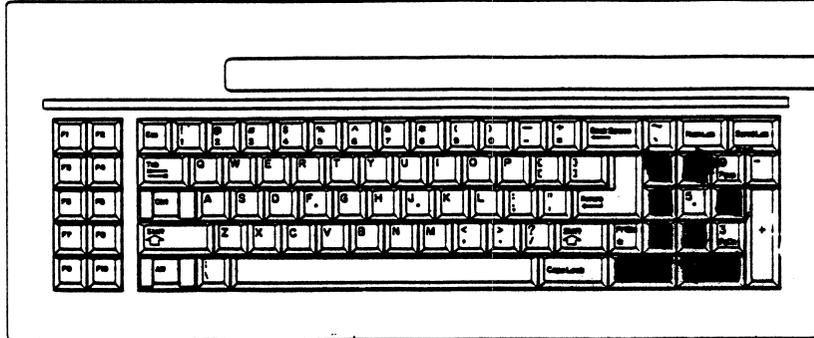
The shaded keys are used when writing, editing and running programs:

Key	Description
ESC	ESCape clears the line that the cursor is in, but does not remove it from memory.
TAB	TAB operates the same was as a TAB key on a typewriter. Tabs are set every 8 characters.
CTRL	ContROl is always used with another key to perform a command or function.  SHIFT changes lower case letters to capitals.
ALT	ALTErnate is used with certain alphabet keys for BASIC key word entry.
Back Space	Backspace moves the cursor to the left, removing one character each time it is pressed.  Return moves the cursor from its current position on one line to the first character position of the next line. Inserts a logical end-of-line character.



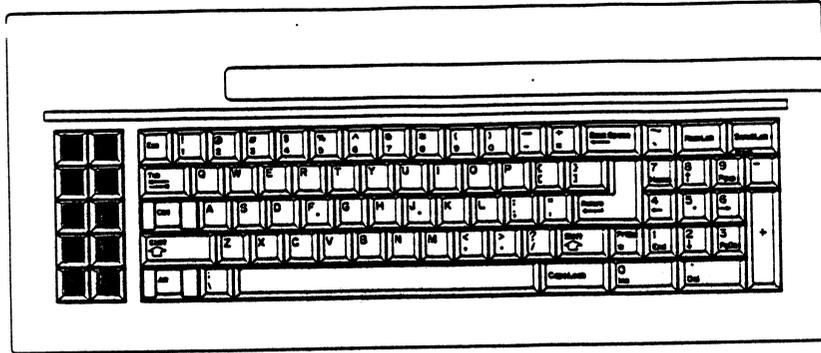
NUM LCK is a toggle key. Press it once and the numeric keypad (keys 0-9) is activated. Press it again and the cursor/editing keys are activated. When the computer is started, the keypad keys are used to position the cursor and edit text on the screen. When NUM LCK is pressed to activate numeric keypad operation, the following keys are active:

<u>Key</u>	<u>Description</u>
1 thru 9	With Num-Lock activated 1 through 9 are operative.
.	
DEL	Decimal Point is part of the numeric key pad.
0	
INS	Zero is part of the numeric key pad.
-	Minus (-) is part of the numeric key pad.
+	Plus (+) is part of the numeric key pad.



The cursor/edit keys on the keypad perform the following functions.

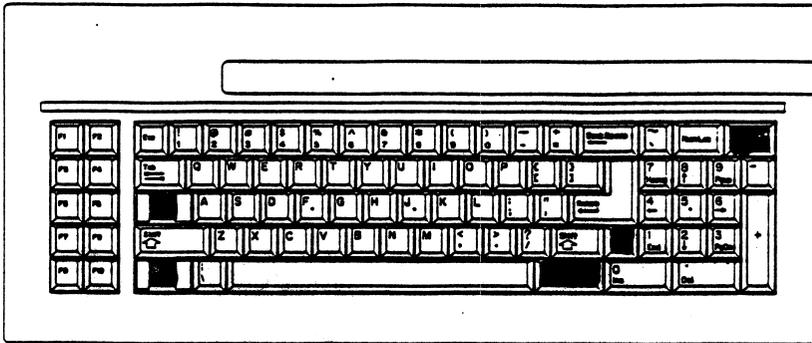
Key	Description
7 Home	Home moves the cursor to the first character position in the top lefthand corner of the screen.
8	Up Arrow moves the cursor up one line each time the key is pressed.
4	Left Arrow moves the cursor left one character position to the left each time the key is pressed.
6	Right Arrow moves the cursor right one character position to the right each time the key is pressed.
2	Down Arrow moves the cursor down one line each time the key is pressed.
1 End	End moves the cursor to the last character on the line where the cursor is positioned.
Del	DEletes the character where the cursor is positioned.
0 Ins	INSert is a toggle key. INSert changes keyboard entries from over-write to insert mode. In INSert mode, characters typed appear on the screen and all text to the right of the new characters moves to the right. In default mode, any keystrokes typed replace existing text on the screen.



Pressing one of the function keys when using GWBASIC is a "shorthand" method of entering a BASIC command. The function keys can be set to frequently used commands or any desired sequence of characters. See KEY, Chapter 2, of the Leading Edge Guide To BASIC, for more information.

The function keys in GWBASIC are already set to:

F1	LIST
F2	RUN
F3	LOAD"
F4	SAVE"
F5	CONT
F6	"LPT"
F7	TRON
F8	TROFF
F9	KEY
F10	SCREEN 0,0,0



These keys perform the following special functions:

<u>Key</u>	<u>Description</u>
CAPS LOCK	CAPS LOCK is a toggle key. Pressing CAPS LOCK causes the letters typed to be displayed in upper case (capitals). Pressing CAPS LOCK again cancels upper case only mode.
PRT SC *	PRinT SCreen prints an asterisk (*) when used alone. When pressed with a SHIFT key, causes all the characters on the screen to be sent to the printer attached to your computer.
SCROLL LCK BREAK	SCROLL LCK is not used with GWBASIC.

The ALT and CTRL keys are also used with special function keys to perform the following commands:

- CTRL + SCROLL LCK/BREAK = BREAK**  
A Break command stops your program while it's running, identifying the line where it stopped.
- CTRL + NUM LCK = PAUSE**  
Pause stops your program from running. Pressing any key restarts from a Pause condition.
- CTRL + 6-> = Next Word**  
Moves cursor to next word on the current line.
- CTRL + 4<- = Previous Word**  
Moves cursor to previous word on the current line.

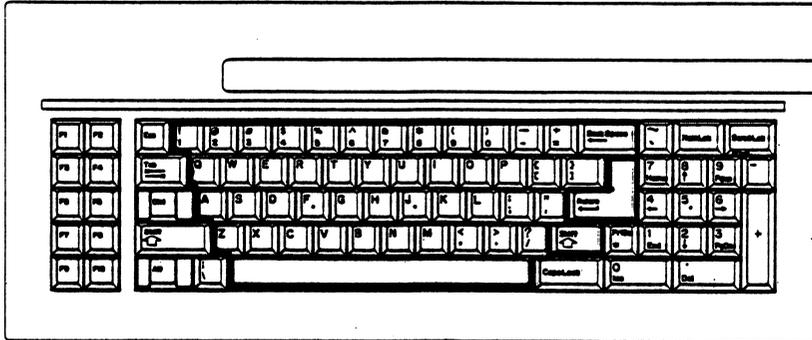
**CTRL + HOME = Clear Screen**

Erases all information from the screen and moves the cursor to the upper left corner.

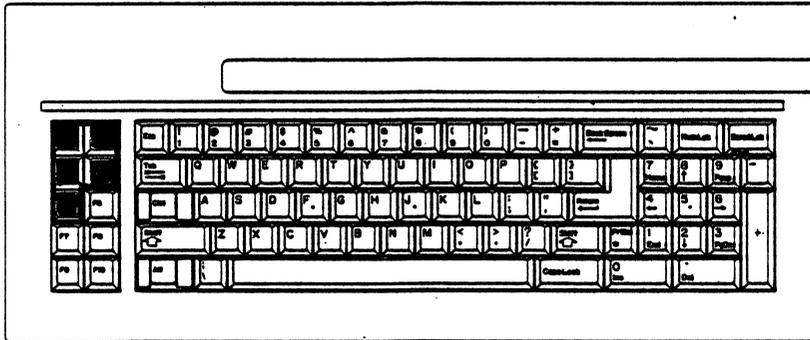
**CTRL + ALT + DEL = Reset System**

Holding the ContROl and the ALternate keys and then pressing DElete performs a "warm start" operation and reloads the disk in drive A.

**Using The Keyboard With MS-DOS**

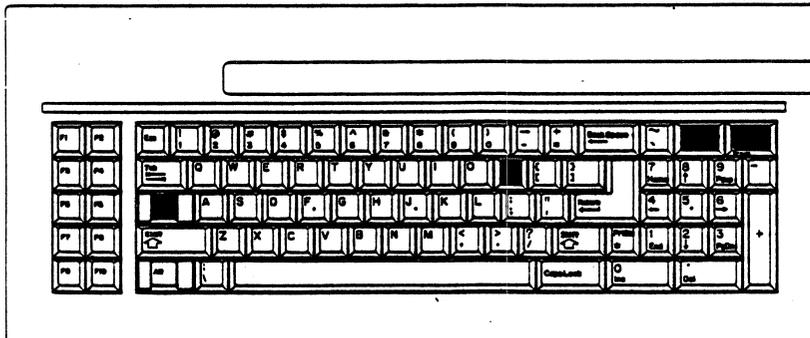


These keys are used the same way as you use the keys on a typewriter.



When you are using MS-DOS, the function keys on your keyboard are used for different MS-DOS-related commands or functions. These are:

<u>Key</u>	<u>Description</u>
F1	Each time you press F1 it redisplay a previously entered line, one character at a time.
F2	Press F2 followed by a character. The screen redisplay all of the previously entered line up to the character you typed.
F3	Press F3 to redisplay the entire previously entered line.
F4	Press F4 followed by a character. The screen skips all of the characters in the previously entered line up to the character you typed.
F5	Saves the currently displayed line for further editing.



The following are examples of ConTRoL functions:

**CTRL + NUM LCK = SUSPEND**

Stops the rapid screen display of a listing or other system operation so you can read the display. Pressing any key continues the listing.

**CTRL + P = ECHO**

Directs all screen messages and your keystrokes to the printer. Pressing CTRL P again stops the ECHO.

**CTRL + SCROLL LCK/BREAK = BREAK**

Stops the current command program while it's running.

## Using MS-DOS

DOS is shorthand for Disk Operating System. MS refers to Microsoft, the firm that developed the particular operating system used with the Leading Edge Model D.

MS-DOS -- a collection of programs on disk -- performs a variety of tasks, including processing commands that you enter at the keyboard and directing traffic among the different components of the hardware system (disk drives, screen, keyboard and so forth).

This section discusses the MS-DOS startup procedures, using the keyboard, flopping disks, the importance of making working copies of your program disks, changing the active drive, file names, and some of the frequently used MS-DOS commands.

---

### Note:

In this section any text that you are to type when following an example is underlined. An underline is used in the examples to distinguish your input from an automatically supplied message.

---

## Starting MS-DOS

When you start or load MS-DOS, the programs on the MS-DOS disk are put into the computer's memory. The process is finished when the screen asks you for the current date and time. Your Leading Edge Model D has its own internal clock that keeps track of the date and time even when the computer is off.

This procedure is called "initialization" of the system, or, in user slang, "booting" the system.

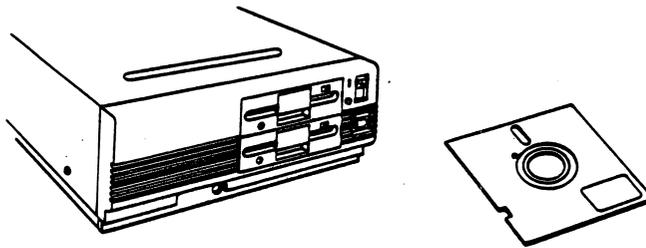
Loading MS-DOS and initializing the system can be done if the computer is On or Off. Both procedures are described below.

---

**Note:**

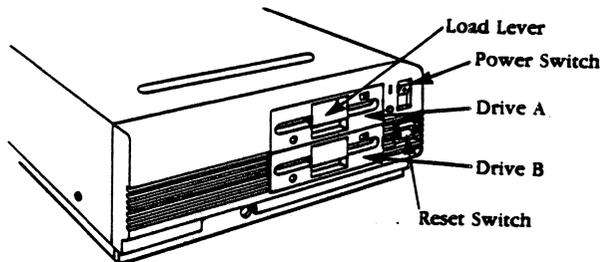
When inserting the MS-DOS disk (or any disk, for that matter):

- o Handle the disk only by its plastic cover. Never touch the magnetic part of the disk.
  - o Insert the disk horizontally with the label side up. Slide in carefully until the disk stops.
  - o If insertion is incomplete or incorrect, the front door does not close. Do not jam the door, but repeat the process carefully.
- 



**Starting the System from OFF**

- (1) Insert the MS-DOS disk into Drive A and close the drive door.
- (2) Press the power switch ON.



- (3) When the red light of Drive A appears, MS-DOS is being loaded into memory. A clicking sound in the system indicates that MS-DOS is being read and transferred.

## Starting the System from ON

- (1) With the MS-DOS disk in Drive A, press and hold ALT and CTRL keys, and then press DEL.
- (2) The screen is erased, the Drive A indicator lamp lights, telling you that MS-DOS is being read.

---

### Note:

This procedure, which is called System Reset, is also used to escape certain unusual situations.

For example:

- o The system enters into an abnormal state while executing a program, and CTRL BREAK has no effect.
- o The PRT SC key is pressed and the computer stops. This indicates that the printer is not ready.

If the system still does not start after completing the System Reset procedure, press the System Reset button on the front panel of the System Unit.

If the System Reset Button does not solve the problem turn the System Unit OFF, wait ten seconds, then turn the power back ON.

---

If your Leading Edge Model D is equipped with a fixed disk drive (See Chapter 5), MS-DOS may be loaded from the fixed disk. If no floppy disk is present in Drive A, after approximately 5 seconds the system attempts to load MS-DOS from the fixed disk. The indicator lamp on the fixed disk drive lights when the disk is being read.

## Entering the Date

After MS-DOS has been loaded into memory, and the system is successfully initialized, the following is displayed on the screen:

Phoenix ROM BIOS Ver 2.01  
Copyright 1984,1985 Phoenix Software Associates Ltd.  
All Rights Reserved

RAM Test 256k

Compatibility Software  
Copyright (c) 1984 by Phoenix Software Associates Ltd.

Microsoft MS-DOS version 2.11  
Copyright 1981,82,83 Microsoft Corp.

     is called a cursor and indicates the position of a letter on the screen.

It is important to enter the current date in order to trace files at some future time.

The procedure is simple:

- (1) Enter month, day, and year in one of the following formats:

MM-DD-YY  
MM/DD/YY  
MM-DD-YYYY  
MM/DD/YYYY

- (2) Press **RETURN**.

---

Note:

If no change is desired, press **RETURN** only.

---

Current date is Tue 1-01-1980  
Enter new date: 7-7-85

---

**Notes:**

- o Use numbers only.
  - o Use dashes or slashes between numbers.
  - o You may input one or two numbers between 1 and 12 for the month, and between 1 and 31 for the day (e.g., 8 or 08).
  - o You may input two or four numbers for the year.
  - o Acceptable entries are a two-digit number from 80-99 or a four-digit number from 1980-2079.
- 

Your Leading Edge Model D also automatically displays the name of the day for the date you enter.

**Entering the Time**

After you have entered the date, the screen displays the current time and asks you to enter a new time.

- (1) Enter the time, using the format HH:MM:SS.SS, where HH indicates hour, MM indicates minutes, and SS.SS indicates seconds to the hundredth of a second.
- (2) Press **RETURN**.

---

**Note:**

If no change is desired, press **RETURN** only.

---

Current time is 0:00:15.52

Enter new time: 15:20 \_\_

---

**Note:**

- o Type one or two numbers between 0 and 23 for the hours, between 0 and 59 for the minutes and seconds, and between 0 and 99 for hundredths of a second (the seconds and hundredths entries are optional).
  - o Use only colons to separate hours, minutes, and seconds, and use only a period to separate seconds from hundredths.
-

## The MS-DOS Prompt

After you enter a valid date and time, "A>" is displayed, the MS-DOS prompt. The prompt invites you to tell MS-DOS what to do next by typing in a command.

The prompt also indicates that "A" is the "default" or "current" drive. A default drive is that disk drive that MS-DOS uses when you are entering a command, unless you explicitly type in another disk drive indicator, such as B or C.

For example, if you wish to know what files are stored on the disk in default Drive A, simply type:

```
A> DIR
```

and press **RETURN**.

If, on the other hand, you want to know what files are stored on the disk in Drive B, you must specify B in the command:

```
A> DIR B:
```

and press **RETURN**.

You may enter either upper or lower case letters. MS-DOS interprets the command correctly in either case.

## Floppy Disks

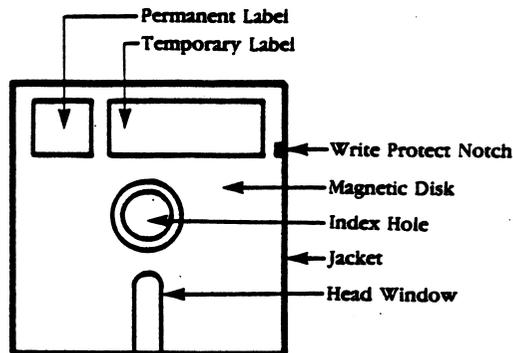
The Leading Edge Model D uses 5-1/4 inch floppy disks for data storage. A Leading Edge Model D 5-1/4 disk holds 360K characters or bytes, and is fully compatible with the IBM>R< PC.

Every magnetically coated disk is permanently encased in a protective black jacket. During use, the disk spins inside the jacket, and the disk drive's read/write head makes contact with the magnetic surface through an oblong slot in the jacket called the head window.

The disk functions much like an audio cassette tape: the computer, like a tape recorder, "reads" information from the disk, or "writes" new information on unused portions. It can also write over old data, simultaneously erasing and replacing it with new data.

A disk is divided on each side into a series of 40 concentric circles called tracks. Each track is divided into eight sectors of 512 bytes each. One byte equals one character, such as "m", "7", or "&". Thus, every piece of information on a disk has a certain "address" composed of side, track, and sector numbers. This makes it easy for MS-DOS to locate specific information.

### Other Features of a Floppy Disk



- o A permanent label, which describes the type of disk, and is affixed to the jacket by the manufacturer.
- o A temporary label is put on by the user and shows the contents of the disk (data or program information). If the contents are changed, change this label.
- o An index hole, that allows the disk drive to check the speed of rotation.
- o The write protect notch, that protects against the loss of recorded data due to wrong operation or mishandling of disks. If an accompanying write-protect tab covers the notch, the disk cannot be written upon.

### Tips on Handling Diskettes

- o Do not touch the magnetic surface of the floppy disk. Finger prints on the disk are a major cause of errors.
- o Never use solvents such as thinner, alcohol, or freon on the magnetic surface.
- o Do not place magnets near the disk. This can erase all recorded data from the disk. Never use paper clips with disks.
- o Do not bend or fold a disk. Floppy disks bend easily, but bending or folding a disk may cause damage.
- o Do not place anything on the disk. This may alter its shape, and thus its effectiveness.
- o Use care when making entries on the label. Never use pencils or ballpoint pens. Use only felt-tip markers. Place the index label correctly, i.e., to the right of the permanent label.
- o Insert and retrieve the disk carefully. If the jacket is damaged, the disk may fail to fit in the drive properly.
- o Always use the protective envelope when a disk is not being used. The tiniest speck of dust, food, or tobacco can make information on the disk unusable, and the envelope protects the disk from such particles.
- o Store disks in upright protective boxes. Disks collect dust and warp when left laying around or when stacked in piles.
- o Never leave disks in direct sunlight or near a heater.
- o Avoid drastic temperature change (i.e., more than 20 degrees centigrade in an hour). Optimum conditions are:

Temperature:	10 to 50 degrees C
Humidity:	20% to 80% RH, provided that wet bulb temperature is below 29 degrees centigrade

- o Transport the disks in protective boxes. Recommended conditions for transportation are:

Temperature: -40 to 53 degrees C  
Humidity: 8% to 90% RH

### Contents of the MS-DOS System Disk

Your MS-DOS system disk contain the following programs:

ANSI.SYS	Extended screen and keyboard handler
ASSIGN.COM	Directs drive requests
BACKUP.COM	Backs up files
BASIC.COM	Loader for GWBASIC.EXE
BASICA.COM	Loader for GWBASIC.EXE
CHKDSK.COM	Checks disks
CHMOD.COM	Changes attributes of files
COLOR.COM	Software switch to color display
COMMAND.COM	MS-DOS command processor
COMP.COM	Compares the contents of files
CONFIG.SYS	System configuration file
DEBUG.COM	Debugger
DISKCOMP.COM	Compares the contents of two floppy disks
DISKCOPY.COM	Backup utility
EDLIN.COM	Line editor
FC.EXE	File compare program
FDISK.COM	Sets up fixed disk drive
FIND.EXE	Finds a string in a list of files or standard input
FORMAT.COM	Formats disks
GRAPHICS.COM	Prints screen graphics
GWBASIC.EXE	BASIC interpreter
LINK.EXE	Linker
MODE.COM	Changes operating mode
MONO.COM	Software switch to monochrome display
MORE.COM	Reviews text
PRINT.COM	Print spooler
RAMDISK.SYS	Uses memory as virtual disk
RECOVER.COM	Recovers disks
RESTORE.COM	Backs up files
SIZE.EXE	Displays file sizes
SORT.EXE	Sorts text
SYS.COM	Transfers system files
TREE.COM	Displays directory paths
XASSIGN.COM	Extended ASSIGN command
XTREE.COM	Extended TREE command

## **Making Backup Copies of Your Disks**

Although the disk drive is a very dependable piece of equipment, the stored data on a disk is always in danger from:

- o Human error in operation
- o Programs with bugs
- o Physical damage to the disk
- o Trouble with the hardware.

Because of these and other circumstances, the data on a disk can suddenly be erased ... every user's nightmare.

The best protection against this rare, but potentially catastrophic occurrence, is to make duplicate copies of all your valuable data files. Since the MS-DOS disk is essential to all other functions, you should make at least one extra copy of it as soon as your Leading Edge Model D is out of the box.

Also, make it a habit not to use the important file on the actual job. Use an expendable copy instead.

## **How To Make a Backup Copy**

- (1) Put the MS-DOS system disk into Drive A, and make sure a write-protect seal is placed on the disk.
- (2) Put a blank disk into Drive B.
- (3) Turn the Leading Edge Model D on.
- (4) Enter the date and time.
- (5) After the prompt, type:

A>diskcopy a: b:

and press **RETURN**

- (6) The drive A indicator lights followed by this message on the screen:

Insert source diskette in drive A:  
Inset target diskette in drive B:

Strike any key when ready

Press a key.

- (7) The drive B: indicator lights and a message that the copying process is in operation is displayed.

When the copying is completed a message will be displayed to ask if you want to make another copy.

Assuming you do not wish to make any more copies, type "n". The A: prompt appears, and you can proceed to the next order of business. (If you type "y", follow instructions on the screen to format more disks).

- (8) Remove the disks and label them. It is advisable to use the backup disk, and store the original as suggested earlier.

#### Changing the Default Drive

To change the default drive, simply type the new drive name after the A> prompt, and press RETURN.

For example, to change the default drive from A to B, type:

```
A>B:
```

After you press RETURN, B> appears on the screen as the prompt:

Now, whenever you type a file name without specifying the drive unit, MS-DOS assumes that it is to be found in Drive B.

To return the default drive to A, type A: after the B prompt.

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

## FileNames

A disk is like a filing cabinet drawer that contains many file folders of information. A two-sided disk can hold up to 112 files.

As with any effective filing system, each file on a disk must have its own special name, so that MS-DOS can find it when you command it to do so.

## Naming a File

A filename is made up of two parts:

filename up to eight characters long, and can be made up of any combination of alphanumeric symbols or these special characters: \$ # & @ ! % ( ) - < > ' \_ ^ | ~

extension an optional short name, starting with a period (.) has one, two, or three characters, and follows immediately after the filename.

Some examples of acceptable file names are:

PAUL.LTR  
20AUG85.DAD  
BUDGET.85  
##2##3##.<\$>  
FRED  
NO.FUN  
K  
CELTICS.!!!

---

**Notes:**

MS-DOS will not accept a filename:

- o with spaces in it, e.g., GO TO.3
- o with commas in it, e.g., I, O, U.\$20
- o with an extension only, e.g., .XYZ.

Always use both parts of the filename (i.e., filename plus extension) when entering a MS-DOS command referring to that file.

Within the specified parameters, you can invent whatever filenames you wish. Remember, however, to make them clear and complete enough so that you know what the file contains. When you go searching for a file sometime in the future, you'll appreciate the wisdom of a well-defined filename.

---

### **MS-DOS Filenames**

Although any name may be used for the filename and the extender, specific extenders have special meanings in MS-DOS:

---

Ext	Format	Example
SYS	MS-DOS System	IO.SYS
COM	MS-DOS Execution Format File	FORMAT.COM
EXE	Microsoft Corp. Execution Format File	MASM.EXE
ASM	Micro Assembler Source Program File	PROASM.ASM
OBJ	Object Program File	PROASM.OBJ
BAT	Batch Processing Format File	PROBATCH.BAT
LST	List File	PROASM.LST
BAS	Basic Program File	PROBASIC.BAS

---

### **File Specification**

Whenever you ask MS-DOS to locate a file, you must specify the drive containing the disk. For example:

A>b:10SEPT85.LTR

Filename plus specified drive equals the "file specification".

---

**Note:**

You don't have to specify the drive if the disk is in the default drive.

---

### **Wild Card Characters**

If, for some reason, you want to perform an operation (i.e., list, copy, etc.) on a group of files that have something in common, there is a convenient way to select these files from the disk.

Wild card characters, "?" and "\*", may be used as abbreviations when specifying a filename.

"?" is an abbreviation for a single character in a filename. For example, let's say your personal letter file disk in Drive B has these files:

```
12DEC84.TXT
10AUG85.TXT
20AUG85.TXT
01SEP85.TXT
07OCT85.TXT
UNCLEMAX.LTR
```

If you want to list all the letters you wrote in 1985 with the extension .TXT, type:

```
A>b:DIR ?????85.TXT
```

All, except the first and last files in the list above, are displayed.

If you only want to see the letter files written in August, type:

```
A:>b:DIR ??AUG85.TXT
```

The screen displays:

```
10AUG85.TXT
20AUG85.TXT
```

"\*" is an abbreviation for any filename or extension. One \* is enough for all or part of either the filename or extension. For example:

```
A>b:DIR *.TXT
```

displays all the files on the disk in Drive B, except the letter to Uncle Max.

The following displays all files but the first and last in the list:

```
A:>b:DIR *85.TXT
```

or,

```
A>b:DIR *85.*
```

The easiest way to generate all files on the disk is to type:

```
A>b:DIR *.*
```

You can use both of these wild card characters together. For example:

```
A>b:DIR ?????85.*
```

displays all but the first and last files on the list.

```
A>b:DIR *.???
```

displays all the files.

## **MS-DOS Commands**

In this section, some of the frequently used MS-DOS commands are described. For more information on all MS-DOS commands refer to your Leading Edge Guide To MS-DOS.

### **Types of Commands**

There are two types of commands in MS-DOS: internal and external.

The internal commands are frequently used commands that are loaded into memory along with the operating system when you start MS-DOS.

External commands remain on the MS-DOS disk and are called up for use only when you type in the specific command.

Like household tools you keep in the kitchen utility drawer versus tools stored in boxes in the basement, internal commands are immediately accessible, while external commands must be hunted down for special, temporary use. This only takes a few seconds.

The MS-DOS Commands are:

---

Internal Commands	External Commands
BREAK	ASSIGN
CHDIR (CD)	BACKUP
CLS	CHKDSK
COPY	CHMOD
CTTY	COLOR
DATE	COMP
DEL (ERASE)	DISKCOMP
DIR	DISKCOPY
ECHO *	FDISK
EXIT *	FIND
FOR *	FORMAT
GOTO *	GRAPHICS
IF *	MODE
MKDIR (MD)	MONO
PATH	MORE
PAUSE *	PRINT
PROMPT	RAMDISK
REM *	RECOVER
REN (RENAME)	RESTORE
RMDIR (RD)	SIZE
SET *	SORT
SHIFT *	SYS
TIME	XASSIGN
TYPE	XTREE
VER	
VERIFY	
VOL	

---

\* Use only with batch files.

## Some Sample MS-DOS Commands

### DIR

The DIRectory command displays the file(s) on a specified disk. It can be used to find out where you put (or misplaced) a particular file, to recall the spelling of a filename, or to list all or part of the directory of files.

To list all the files on a given disk:

(1) Insert the disk you wish to search into Drive B  
(MS-DOS remains in Drive A).

(2) Type:

dir b:

(3) Press **RETURN**

If you want to check and see if a particular file, let's say BUDGET.85, is on the disk:

(1) Type:

dir b:BUDGET.85

(2) Press **RETURN**

If the disk does not contain this file, it displays:

Volume in drive A is (volume name)  
Directory of A:\

File Not Found

If it does exist, the filename plus extension, size, and the time and date the file was last updated are displayed.

---

#### Note:

The wild card characters "?" and "\*" can be used as parameters of the filename. For example, if you type:

dir b:\*.MOD

all the files on the disk with a MOD extension are displayed.

---

There are two features that may be used with DIR:

- o /P selects a page mode. If you type in /P after the file specification, the display pauses when the screen becomes full. To restart the display, push any key.
- o /W selects a wide display. If you type in /W after the file specifications, only filenames are displayed, no other information. Five file names per line appear.

The Leading Edge Model D is able to output to the printer and display on the screen simultaneously. Press **CTRL P**, followed by dir b:\*.\* (or whatever parameters you wish), to display and print all the files on disk in Drive B.

### **REN (or RENAME)**

This command lets you change a filename. It's helpful when the original name you've given to a file is incomplete or unclear or requires updating.

For example, if you have a file 10AUG85.TXT that you wish to change to 15AUG85.DAT and the file is on a disk in the default drive:

(1) Type:

REN 10AUG85.TXT 15AUG85.DAT

(2) Press **RETURN**

The file is renamed 15AUG85.DAT

If the disk is in other than the default drive, specify the drive. For example, if the above file is on disk in Drive B, type:

REN B:10AUG85.TXT 15AUG85.DAT

Wild card characters "?" and "\*", may be used for both parameters. When using these abbreviations, each character of the file name is changed on a one-to-one basis between the old file name and the new file name. For example,

REN 10AUG85.TXT 15\*.DAT

or

REN 10AUG85.TXT 15?????.DAT

changes the name of the file in the default drive from 10AUG85.TXT to 15AUG85.DAT.

## DEL (or ERASE)

From time to time it's a good idea to go through your disks and erase files that are out of date or unusable. This saves you the confusion and expense of having obsolete files taking up space on a disk.

It's important to proceed carefully with the ERASE command. Once a file is gone, it is GONE. So a wise first step is to check the DIRectory on a disk and find out exactly what's there and how it is spelled.

Let's say the following files are on a disk in the default drive:

```
CAROL84.LTR
KAREN85.LTR
25MAR84.DAD
13JUL84.DAD
21OCT84.DAD
DAD85.LTR
```

If you want to erase only one file, type:

```
DEL DAD85.LTR
```

Check your typing carefully and press RETURN. DAD is then DELETED from the disk directory.

If the disk is on other than the default drive, you must specify the drive:

```
DEL B:DAD85.LTR
```

You can also eliminate several files at once by using the wild card characters. BUT, BE CAREFUL!

For example, if you type:

```
DEL *.DAD
```

all the files with the extension DAD are erased.

```
DEL *.*
```

erases all the files from the disk. (This procedure is an alternative to reFORMATting a disk, which accomplishes the same thing.)

## **TYPE**

This command displays the contents of a file on the screen.

To find the name of the file you wish to view, use DIR. To change the file contents, use the Line Editor, EDLIN or the appropriate text processing program.

The only screen display format control that TYPE performs is TAB. If the contents of a binary file (.COM, etc.) are displayed by the TYPE command, control characters including Bell, Form Feed, and Escape are not displayed.

To view the contents of file SECRET.007 in the default drive, type:

```
TYPE SECRET.007
```

The following command displays the contents of file GALORE.WOW in Drive b:

```
TYPE B:GALORE.WOW
```

## **COPY**

Occasionally you may want to copy a single file, either onto a new disk or onto the same disk where the original resides. You can also change the name of the file when you make the transfer.

### Copying a File Onto the Same Disk

Let's say you have a file on disk called DATABANK.RED, and you wish to make a copy of that file onto the same disk and call it XMASCARD.83:

- (1) With MS-DOS in Drive A, insert the disk that holds the original file into Drive B.
- (2) Type:

```
A>COPY B:DATABANK.RED B:XMASCARD.85
```

and press **RETURN**.

- (3) After the process is complete, this appears on your screen:

```
1 File copied  
A>
```

- (4) Remove the disk from the drive and label it properly.

---

Notes:

The original, source file specification is always entered first and the copy second.

If the copying process is being done in the default drive, it isn't necessary to include the drive name in the file specification. For example, it is sufficient to type:

COPY DATABANK.RED XMSCARD.85

Take note of where there are spaces and where there are none. MS-DOS reads a space like any other character.

Be careful in choosing a name for the newly copied file. A disk can only contain one file with a particular name. So if you give the new file a filename already in use on that disk, the new information replaces the old information under that name. In other words, the old file data is erased.

---

#### Copying a File Onto Another Disk

In general, it is advisable to make copies onto a second disk to avoid confusion and the possibility of getting a DISK IS FULL! error message in mid-procedure.

In this example, the original file, VITAMIN.B6, is located on the disk in Drive A, and the copy, to be named STRESS.VIT, is destined for the disk in Drive B.

- (1) With source and destination disks in Drives A and B, respectively, type:

A:COPY VITAMIN.B6 B:STRESS.VIT

and press **RETURN**. (Note that it isn't necessary to include the default drive spec of the source file.)

- (2) After the copying process is complete the screen displays:

```
1 File copied
A>
```

- (3) Remove both disks and label.

---

**Notes:**

If you wish the copy to have the same name as the original, type:

```
COPY VITAMIN.B6 B:VITAMIN.B6
```

or,

```
COPY VITAMIN.B6 B:
```

You can also copy a group of files by connecting file specs with a "+" as shown:

```
A>COPY BUDGET.SLS+BUDGET.ACC+BUDGET.MAR B:BUDGET.85
```

This command connects the contents of files BUDGET.SLS, BUDGET.ADD, and BUDGET.MAR and transfers them to a file called BUDGET.85 on disk in Drive B.

---

**DATE**

To set or change the date your computer uses with its files:

- (1) Type DATE and leave a space.
- (2) Type one or two numbers between 1 and 12 for the month.
- (3) Type a dash (-) or slash (/) (MS-DOS accepts either character).
- (4) Type one or two numbers between 1 and 31 for the day.
- (5) Type a dash or slash.

- (6) Type two numbers to indicate the last two digits of the year, OR four numbers for the entire year. For example:

A:DATE 12-03-85

- (7) Press **RETURN**.

You can enter September 2, 1985, for example, in any of the following ways:

9-2-85	9/2/85
9-02-85	9/02/85
09-2-85	9/2/85
09-02-85	09/02/85
09-02-1985	09/02/1985

## **TIME**

To set or change the time your computer uses with files:

- (1) Type **TIME** and leave a space.
- (2) Type one or two numbers between 0 and 23 for the hours.
- (3) Type a colon (:).
- (4) Type one or two numbers between 0 and 59 for the minutes.
- (5) Type a colon.
- (6) (Optional) Type one or two numbers between 0 and 59 for the seconds.
- (7) (Optional) Type a period (.) followed by two numbers between 0 and 99 for hundredths of a second. For example:

A:TIME 11:35:15.05

- (8) Press **RETURN**.

You can enter 9:15 and 25 seconds, for example, in any of the following ways:

9:15:25
09:15:25
09:15:25.00

## External Commands

External commands reside on disk and are called into action when you type their name on the MD-DOS command line.

### FORMAT

Before you can use a brand new 5 1/4 inch floppy disk with your Leading Edge Model D, you must FORMAT it. The FORMAT procedure marks the tracks and sectors on the disk, preparing it to receive information. Format also checks the disk for defects.

You can also re-FORMAT an old disk if you want to erase everything on it and use it as if it were new.

To FORMAT a disk placed in Drive B, simply type:

A><u>FORMAT B:</u>

It will take some seconds to complete the procedure, after which the screen will ask if you wish to format any more disks:

Format Another (Y/N)?

Press N if you don't, Y if you do, and follow directions on the screen.

---

#### Note:

When you purchase a new box of disks, it's a good idea to FORMAT the whole lot of them at once. That way, you always have a fresh disk ready, and don't have to interrupt a job to prepare one when you need it.

---

### CHKDSK

This command allows you to browse the directory of a specified drive and check the condition of a disk.

To check a disk in Drive B, type:

A><u>CHKDSK B:</u>

If the directory on this disk is complete, a status report is shown.  
For example:

**Status Report:**

362496 bytes total disk space  
25600 bytes in 3 hidden files  
302080 bytes in 35 user files  
34816 bytes available on disk

262144 bytes total memory  
228528 bytes free

If the disk fails to pass inspection, one or more error messages appear on your screen. Refer to Chapter 5, CHKDSK, in your Leading Edge Guide To MS-DOS for more information.

**SYS**

The SYS command is used when renewing the system file. It copies IO.SYS and MSDOS.SYS to the specified disk.

To copy the MSDOS file from a disk in the default drive to Drive B (or any specified drive), type:

A><u>SYS B:</u>

When the process is finished, the message:

System transferred

A>

appears on your screen.

**EXE2BIN**

This command converts files from an EXE format to a binary format.

For example,

A><u>EXE2BIN TEST.EXE B:TEST.COM</u>

converts the file TEST.EXE on the default drive (A:) to a binary format and transfers it to TEST.COM on drive B:.

---

Notes:

In the input file, if an extension is omitted, the first filespec is assumed to be EXE file.

In the output file, if the drive name is omitted from the file spec, the file is written to the same drive.

When the output file name is omitted, the same name as the input file is used.

When the extender of the output file is omitted, .BIN is used.

The input file must be in valid .EXE format as generated by the linker.

The resident part of the file must be less than 64K.

A STACK segment is not allowed.

---

In order to fully understand and use MS-DOS commands, you must read the Leading Edge Guide To MS-DOS that is included with your computer.

## **Chapter 4**

### **Problem Determination Procedures.**

#### **Introduction**

Sometimes your Leading Edge Model D does not behave the way your manual says it should. It may have been fine when you finished with it yesterday, but today it's acting "funny." If that's the case, you have turned to the right place for help.

The Problem Determination Procedures -- Diagnostics -- help solve problems you may experience with your Leading Edge Model D. Sometimes you perform the diagnostic steps, and sometimes you tell the Leading Edge Model D to do them for you.

Follow this guide in making the series of suggested observations, and answer YES or NO when checking results. By following the steps outlined here, you will discover what's to be done to put your Leading Edge Model D back in working order.

If your system has a fixed disk installed, refer to Chapter 5 for Problem Determination Procedures that may be different from those in this chapter.

#### **Start Up Diagnostics**

##### **Things to Notice**

Throughout these problem determination procedures you are asked to observe what your Leading Edge Model D does. Whenever your Leading Edge Model D misbehaves, notice as precisely as you can what happens. Specific things to note are:

- o What appears on the screen? Write down error messages and any strange characters or gibberish or sentences displayed.
- o Do any lights come on? Which ones? For how long? Do they blink?
- o Do your disk drives keep spinning? Which one(s)? How long?

## Preliminary Steps

- o If you are using a software package and an error message appears on the screen, check the error message, trouble shooting, or problem section of your software manual. Next check the error message in the Leading Edge Guide To MS-DOS. If the problem is still unresolved, you may have a problem with your Leading Edge Model D hardware. In this case, follow the procedures outlined here.
- o If your monitor appears to be the problem, go to Step 6 --- Monitor Procedures.

---

### Warning:

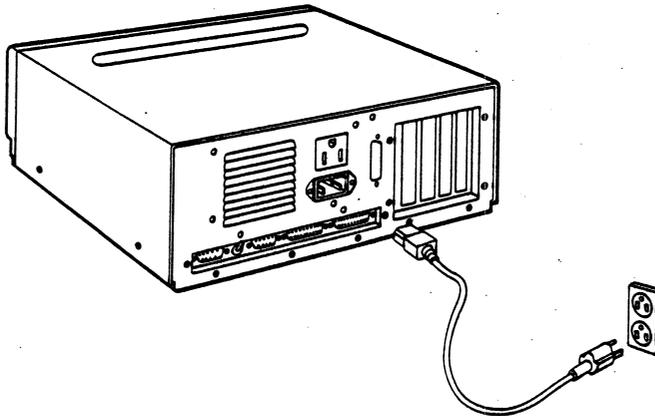
Before unplugging your Leading Edge Model D from the wall outlet, turn OFF the power on the System Unit.

---

## Step 1 - Connections

This procedure checks that your electrical connections are solid.

- o Turn OFF the System Unit.
- o Unplug the System Unit from the wall.



F10

- o Use a working lamp to check that there is power to the wall outlet.
- o Remove and reinstall the Keyboard cable.
- o Remove and reinstall the two Monitor cables -- video and power.
- o Remove and reinstall the power cable from the System Unit.

## Step 2. Power On

- o Plug the Leading Edge Model D into a working wall outlet.
- o Before taking action, notice (when you turn the power on):

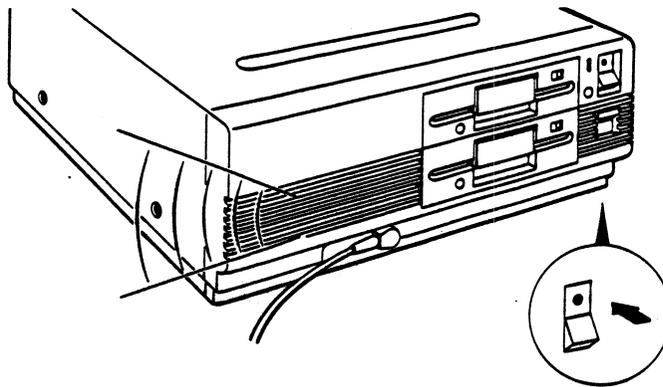
Indicator lights

Sounds

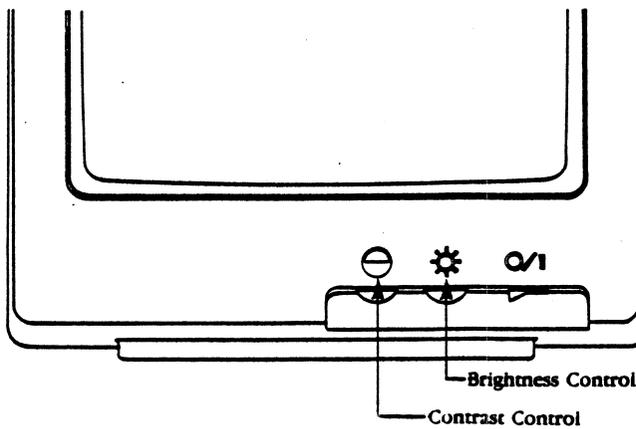
Anything displayed on the screen

The normal responses are:

- (1) Power indicator is ON.
- (2) Cursor appears in upper left corner of the Monitor.
- (3) "Phoenix ROM BIOS Ver 2.01" appears on the screen.
- (4) Within 2 seconds after message appears, Memory Test starts.
- (5) After Memory Test one short beep sounds
- (6) Indicator light on Drive A comes on
- (7) About 20 seconds later, "Non-System disk or disk error Replace and strike any key when ready" appears on the screen and the disk drive indicator light goes OFF.



- o Notice if the power indicator light (to the right of the power switch) is ON.
- o Turn the brightness and contrast knobs on your Monitor fully clockwise. Make sure the Monitor is turned ON.

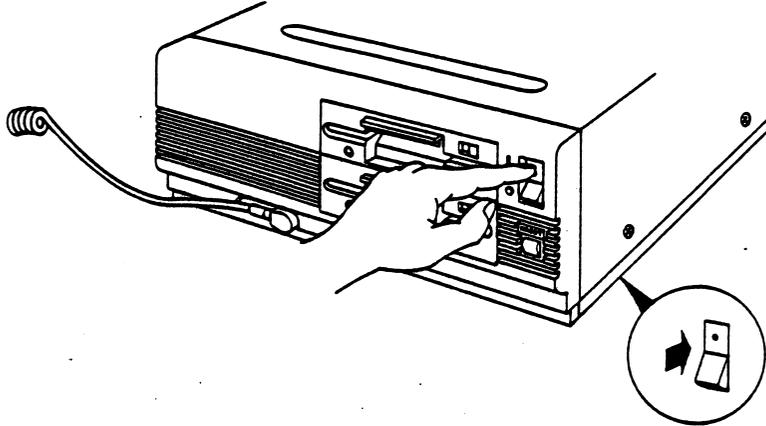


**Step 3. What are the responses?**

- o If there is a screen prompt, adjust contrast and brightness knobs for personal viewing comfort.
- o If some screen prompts are missing or incorrect, write down what you see or hear. You need this later to determine what action to take.
- o If you miss your Leading Edge Model D's responses, turn the power OFF, wait 5 seconds, turn the power ON again, and observe what happens.

Here are the normal responses:

- (1) The power indicator is lit.

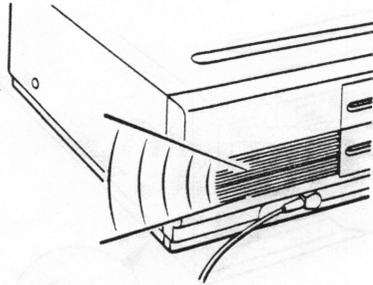


- (2) Cursor appears in the upper left corner of the monitor and "Phoenix ROM BIOS Ver 2.01" appears on the screen.

-----  
art: screen with boot messages  
-----

*art not available*

- (3) After message, Memory Test starts
- (4) Within 2 seconds after Memory Test, one short beep sounds, indicating that the Model D has successfully finished testing certain parts of the System Unit.



(5) After the single beep, the indicator light on Drive A comes ON.

(6) About 20 seconds later,

"Non-System disk or disk error  
Replace and strike any key when ready"

appears on the screen. The disk drive light goes OFF. Even though this message says "Error", nothing is wrong. Your Leading Edge Model D is telling you that there is no disk in disk drive A. In order to do anything, your Leading Edge Model D needs instructions (software) from a disk in Drive A. Your Leading Edge Model D tries to "read" instructions from drive A, waits about 20 seconds for a disk to read, and then simply "runs out of time to wait."

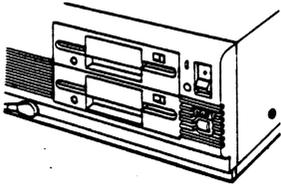
Regardless of whether your Leading Edge Model D responds normally or not:

- o Go to Step 4 to determine what to do next.

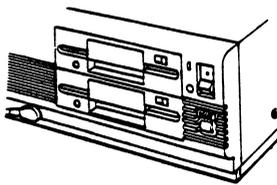
#### **Step 4. Possible Start Up Responses**

Shown below are different ways your Leading Edge Model D can respond during the power ON process in Step 2 of the Start Up Diagnostics. Choose the response that matches your computer's response and proceed as indicated.

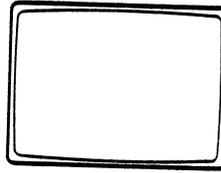
**Response 1.**



Power indicator  
light On.



Disk indicator  
light ON for 20  
seconds, then  
OFF.



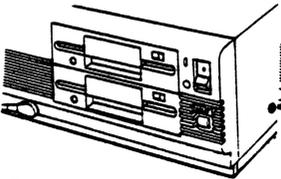
See Screen #2  
note attached

---

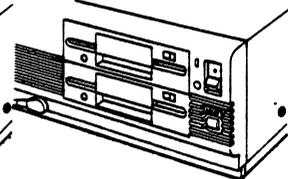
Your system starts successfully.

- o Retry what you were doing before your system misbehaved.
- o If a problem persists, but the computer successfully starts, go to Step 10, Diagnostic Aids.

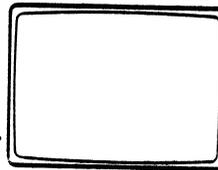
**Response 2.**



Power indicator  
light never  
came ON.



No response.



No response.

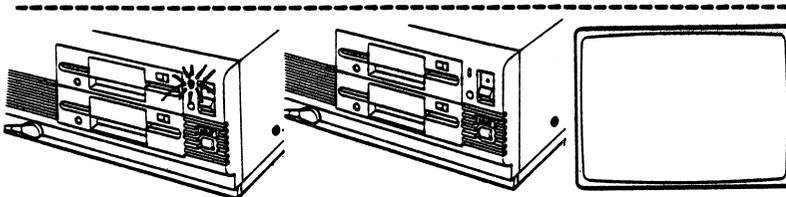
---

The System Unit never receives power.

- o Make sure you turned the System Unit ON in step 2.
- o If you did turn the System Unit ON, turn it OFF, wait 5 seconds and quite firmly turn it ON again.

- o If the power light still does not come ON, recheck your power source and cable connections in Step 1. Turn the System Unit ON.
- o If the power light still does not come ON, the problem is likely in the System Unit. Go to Step 5, Service Information.

**Response 3.**

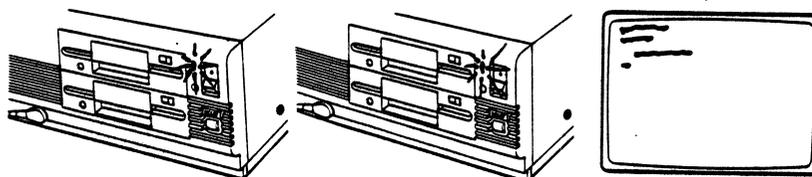


Power indicator light ON. No response. No response.

The System Unit has failed to operate properly.

- o Turn the System Unit OFF, wait 5 seconds and quite firmly turn it ON again. Or push the System Reset switch on the front of the System Unit.
- o If anything other than the normal responses occur, go to Step 5, Service Information. The problem is likely in the System Unit.

**Response 4.**

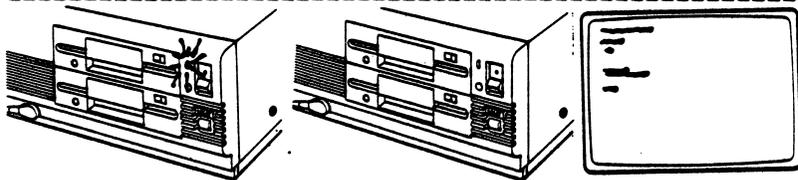


Power indicator light ON. 1 short beep. No response from diskette drive. or comes ON briefly. "No scan code from keyboard" message appears.

The Keyboard has failed to operate properly.

- o Turn the System Unit OFF.
- o Remove the Keyboard cable and reinstall it.
- o Check the keyboard to see if a key is stuck. If so, release the key and turn the System Unit ON.
- o If anything other than normal response occurs, go to Step 10, Diagnostic Aids.
- o If you are unable to perform the Diagnostic tests, the problem is most likely in the Keyboard or the System Unit. Go to Step 5, Service Information.

**Response 5.**



Power indicator  
light ON.

No response.

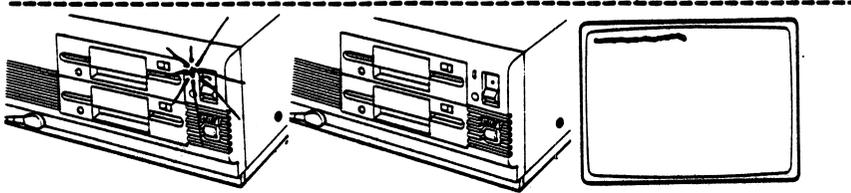
"Mem Par NMI Int"  
message appears.

---

System memory is bad or expansion memory is bad.

- o Turn the System Unit OFF.
- o Wait 5 seconds, turn the System Unit back ON. If the same message reappears some RAM memory must be replaced.
- o Go to Step 10, Diagnostic Aids.

**Response 6.**



Power indicator  
light ON.

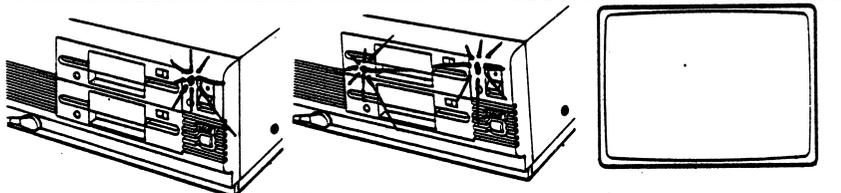
No response.

"ROM bad chksum=xxh"  
message appears.

The System ROM is bad.

- o Go to Step 5, Service Information.

**Response 7.**



Power indicator  
light On.  
1 short beep.

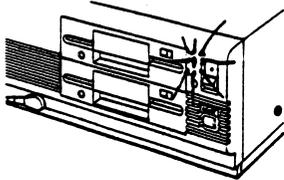
Disk indicator  
light ON for 20  
seconds, then  
OFF.

Screen is blank.

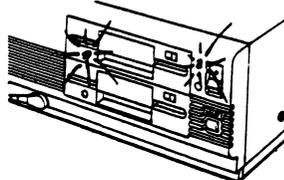
The likely problem is the Monitor.

- o Go to Step 6, Monitor Procedures.

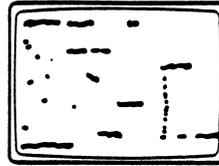
**Response 8.**



Power indicator  
light ON.  
1 short beep



Disk indicator  
light ON for 20  
seconds, then  
OFF.



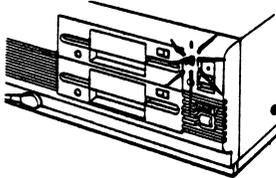
Screen  
has wrong  
or random  
characters.

---

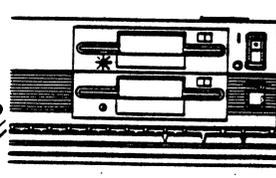
Your Leading Edge Model D is sending garbled information to the screen.

- o Go to Step 6, Monitor Procedures.

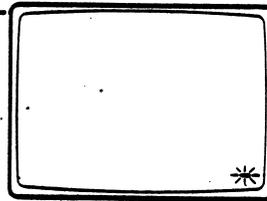
**Response 9.**



Power indicator  
light ON.  
1 short beep.



Disk indicator  
light ON for 20  
seconds, then  
OFF.



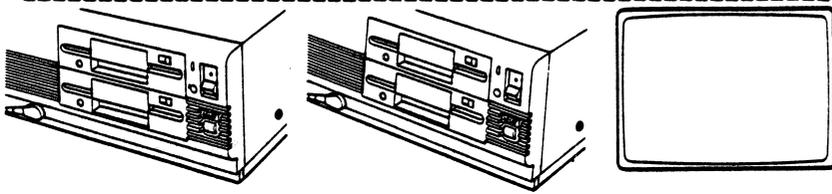
Screen  
has wrong  
or no color.

---

Your Leading Edge Model D screen appears to have no color.

- o Go to Step 6, Monitor Procedures.

## Response 10.



Power indicator  
light On.  
1 short beep.

Disk indicator  
light ON for 20  
seconds, then  
OFF.

Obvious  
TV type problems  
(shadows,  
rolling screen)

The Monitor appears to need adjustment.

- o Go to Step 6, Monitor Procedures.

## Service Information

### Step 5.

Before having your Leading Edge Model D serviced make sure you have done all you can to fix the problem yourself.

- o Did you perform the Start Up Diagnostics?
- o If you have an obvious Monitor problem, did you perform Step 6, Monitor Procedures?
- o If after following Steps 1 through 5 your Leading Edge Model D still had a problem, did you go to Step 10, Diagnostic Aids?

Once you have determined which component of your system has a problem, follow the procedures listed below:

- o Turn System Unit OFF.
- o Turn OFF all the components.
- o Remove the power cord from the wall outlet.

- o Have the unit serviced. Take with you, your notes on the responses your Leading Edge Model D made. If you used the Diagnostic Aids, take the error message information with you.

---

**Note:**

If the Monitor has just been serviced, the adjustments are correct, the cables are secure, the monitor controller board is properly installed and problems persist, the System Unit is the likely problem. Go to Step 10, Diagnostic Aids. Have the System Unit serviced.

---

### **Monitor Procedures**

---

**Caution:**

If the display Monitor is in a humid environment or where it might get wet, shock or fire may result.  
Opening the case of the Monitor is dangerous, because you expose high voltage components in the monitor.

---

### **Power**

#### **Step 6.**

Is the Monitor power turned ON?

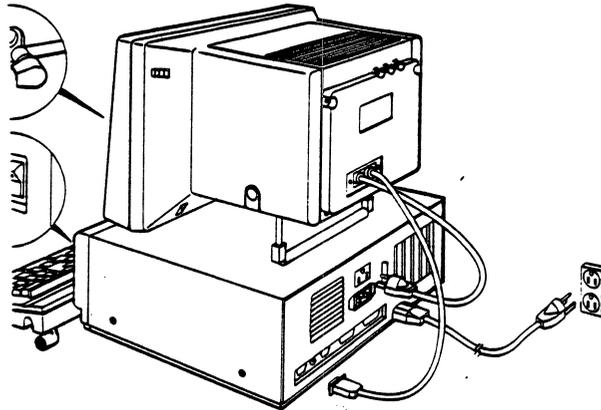
YES -- Go to Step 6.1

NO -- Turn the Monitor on. Retry Steps 1-3.

## Cables

### Step 6.1

Are both the video and power cables connected securely?



- YES -- Go to Step 6.2
- NO -- Turn OFF Monitor and System Unit.  
Go to Step 1.

## System Unit

### Step 6.2

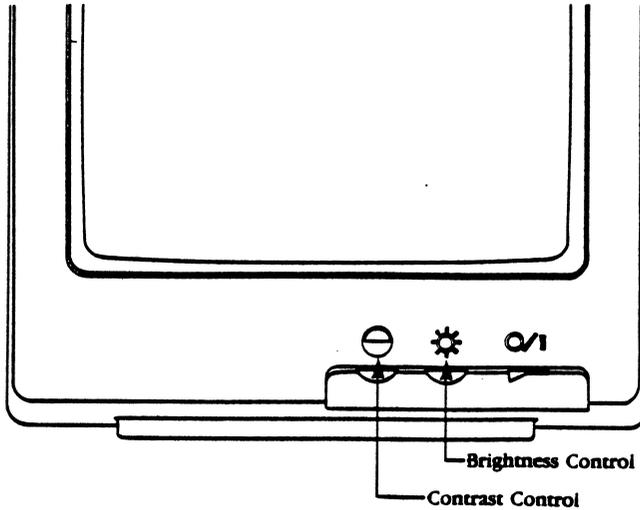
Is the screen still blank?

- YES -- Has the System Unit been turned ON for a few seconds?
- NO -- Turn ON the System Unit.
- YES -- Go to Step 6.3.

## Monitor Controls

### Step 6.3

- o Turn the brightness and contrast control knobs fully clockwise.



o Did characters or cursor "\_" appear on the screen?

YES -- proceed with whatever you were doing.

NO -- Go to Step 6.8.

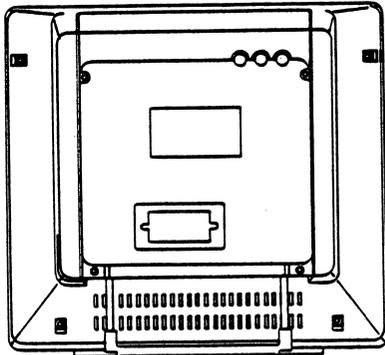
### Vertical Hold

#### Step 6.4

Are the characters on the screen running upwards or downwards?

NO -- Go to step 6.5.

YES -- Locate the "V-HOLD" (vertical synchronization control knob on the back of the monitor.



Screen running downwards? Turn V-HOLD control clockwise.

Screen running upwards? Turn the V-HOLD control counter-clockwise.

Did the screen stand still?

YES -- Proceed with what you were doing prior to this step.

NO -- Go to Step 6.8.

### **Random Characters or Garbage**

Step 6.5

Are there wrong or random characters on your screen? Is there "garbage" displayed?

NO -- Go to Step 6.6

YES -- Turn the Monitor and System Unit OFF.

Recheck the cable connections.

If problem is still there, go to Step 6.6.

### **Interference**

Step 6.6.

Turn on your TV or Radio. Then turn your Leading Edge Model D off and on. Does your Leading Edge Model D cause interference on your radio or TV?

NO -- Go to Step 6.7.

YES -- Try each of the following steps.

- o Reorient the antenna for your TV or radio.
- o Relocate your Leading Edge Model D with respect to the TV or Radio.
- o Plug your Leading Edge Model D into a different circuit from your TV or radio.

If these steps do not clear the interference, contact your place of purchase or an experienced TV/radio technician for additional suggestions. The US government prints a booklet "How to Identify and Resolve Radio-TV Interference Problems", Number 004-000-00345-4, available from U.S. Government Printing Office, Washington, D.C., 20402.

## **Color (for color monitor only)**

### **Step 6.7**

Is yours a Color Monitor?

NO -- Go to Step 6.8.

YES -- If there is no color or the wrong color, check the color adjustments.

If that does not correct the problem, go to step 6.8.

## **Controller**

### **Step 6.8**

By now you have tried every adjustment on your monitor, and have rechecked the video and power connections and you still have a problem with your monitor.

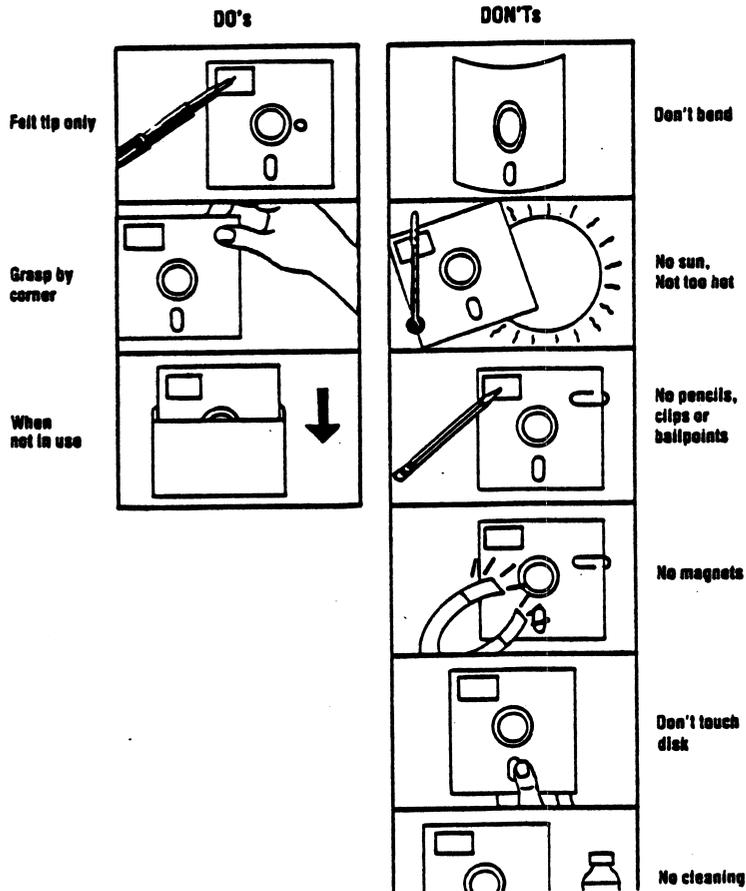
Check that the video cables are attached to the correct socket (Color cable to color socket, monochrome cable to mono socket.) Be careful to check that you are using the Installation Procedures for your type of Monitor.

If you still have trouble with your monitor after checking the Controller Installation, have the Monitor serviced. If you still have problems with the monitor, the problem is likely in the System Unit. Have the System Unit fixed. See Step 5, Service Information.

## **Disk Diagnostic Procedures**

Many disk error messages are due to improper handling of the disks themselves. Please refer to the Disk Handling Procedures on this page before proceeding to Disk Errors, Step 7.

## DO'S and DON'TS for handling disks



### Disk Errors

#### Step 7.

While performing the Start Up Procedures or while using your Leading Edge Model D for any task, one of the following messages may appear. Take the indicated action to correct the problem.

#### Messages

##### Step 7.1

Did one of the following messages appear?

Non-System disk or disk error  
Replace and strike any key when ready

Bad or missing command interpreter

NO -- Go to Step 7.3.

YES -- If you are trying to load MS-DOS, put a MS-DOS System disk in Drive A and press any key. If the message persists, remove the disk and perform the Start Up Diagnostics, Steps 1-4.

If you were performing the Start Up Diagnostics, go to Step 7.2.

#### Step 7.2

This step is taken only if you have a fixed disk drive in your Leading Edge Model D computer. If you don't have a fixed disk go to Step 7.5.

- o Check that the Fixed Disk Controller is properly installed. Recheck the cable connections. Redo the Start Up Diagnostics, Steps 1-4.
- o If the message persists and you have two disk drives, check the Installation procedures that pertain to the second Drive.
- o If the message persists, see Steps 10 - 16, Diagnostic Aids.

### Step 7.3

Did the following message appear?

Write protect error

NO -- Go to Step 7.4.

YES -- Do you have a disk in either disk drive?

NO -- Go to Step 7.2.

YES -- The procedure you are performing is trying to write to one of your disks, but your disk has a Write Protect tab on it. Remove the Write Protect tab if you do want to write to the disk and retry the procedure.

### Other Messages

#### Step 7.5

If any other message occurred, check your program manual, the MS-DOS Guide, or the errors in Step 15, Diagnostic Aids.

### Printer Diagnostic Procedures

Since you may have any of a number of different printers connected to your Leading Edge Model D, here we give you some cautions and general procedures to determine where the problem is. If the procedures here do not solve the problem, consult the guide you received with your printer for detailed diagnostic procedures.

---

**Caution:**

Always turn the power OFF on both the Printer and the System Unit before removing the Printer Cable.

---

**Preliminary Steps**

**Step 8.**

- o Is the Printer plugged in?
- o Check the wall outlet into which the Leading Edge Model D and the Printer are attached (use a working lamp).
- o Is the Printer Cable properly connected at both the Printer and the System Unit?
- o If any lights on the Printer Control panel do not work, have the printer serviced.
- o Select below the item that best fits your symptom. If you correct the problem and the symptom persists, go to your printer manual and perform the Self-test procedures and any other diagnostic procedures there. Remember to turn ON the printer to perform those tests.

**Symptom: Data is lost.**

Was the Printer power switch OFF when the System Unit was sending information to the printer?

- YES -- Turn the printer power ON. Retry.
- NO -- Go to Step 8.1.

**Symptom: Partial or no printing.**

Is the ribbon new and installed properly?

- YES -- Disconnect printer cable and self test. If problem persists, see the printer guide and recheck the ribbon carefully. If the problem still persists, go to Step 8.1.
- NO -- Correct and retry.

**Symptom: Printer beeps and forms are mishandled.**

Are the forms installed and feeding properly?

YES -- Recheck forms installation and problems listed under NO. See Printer manual for further diagnostic procedures. If problem persists, go to Step 8.1.

NO -- Check for the following common problems.

- o Forms feed path is not straight
- o Obstructions in the forms feed path.
- o Tractors are not properly adjusted. Are they are slightly too far apart or close together? Is the paper lined up straight?

If the problem persists or the printer keeps beeping, go to Step 8.1.

**Symptom: Printer Error messages display.**

- o Go to Step 8.1

**Cable**

Step 8.1

Is Printer properly cabled and secured?

NO -- Correct and retry.

YES -- Go to Step 10, Diagnostic Aids

**RS-232C Procedures**

Step 9.

Since you may have any number of devices connected to your Leading Edge Model D via the RS-232C cable, here you receive some general procedures to determine what the problem is. If these procedures do not solve the problem, consult the manual for the device on the other end of the RS-232C cable.

- o First check that the cable is secured well to both the System Unit and to the device at the other end.
- o Often the pin assignments are incorrect. Therefore, carefully check the pin assignments. See RS-232C Installation for a table of these assignments.

### **Diagnostic Aids**

These Diagnostic Aids are software instructions that test the components of your system -- the System Unit, Keyboard, Monitor, and Printer. These tests are performed by using a Diagnostic Disk.

### **Preliminary Steps**

Step 10.

- o Turn the System Unit OFF.
- o Make sure your Monitor, Keyboard and Printer are properly connected to the System Unit.

### **Initializing the Diagnostic Program**

Step 11.

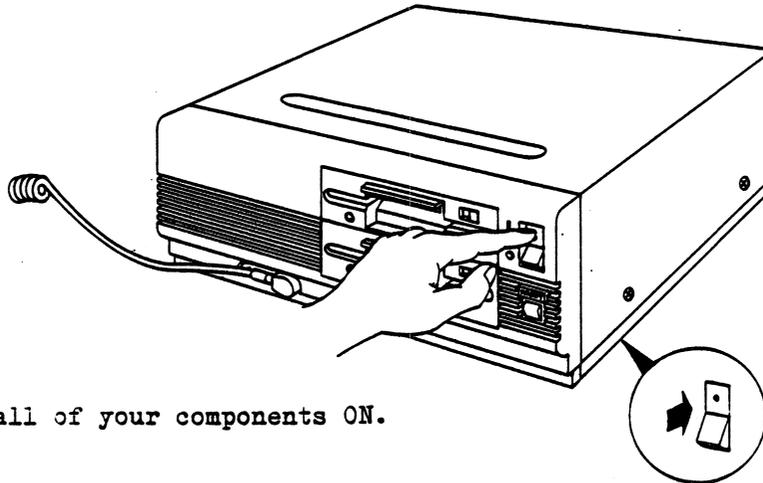
- o Select the disk labeled "Diagnostic Disk" from the back of this manual.  
  
(If a Diagnostic Disk is not present, check the system disk for a file named DIAGNOSE. If it is present on the system disk, put a working copy of the system disk in drive A: and follow the steps below.)
- o The System Unit should still be turned OFF.
- o Lift the load lever on disk drive A.
- o Gently insert the Diagnostic disk until it stops.
- o Push down the load lever.

-----  
art: front of System Unit with diskette  
being inserted into Drive A

callouts: Load Lever Drive A Drive B  
Note position of label (label facing up).  
-----

*Art Not Available*

- o Turn your System Unit ON.



- o Turn all of your components ON.

### **System Configuration**

#### **Step 12.**

- o Your Leading Edge Model D is checked by the Diagnose program to see what options you have. The components are displayed. Is the screen similar to the one below?



- o Check that your external options are connected and turned ON.
- o Reload DIAGNOSE.COM and recheck. Does the screen now match your system configuration?
  - YES -- Press +. Go to step 14.
  - NO -- Press ESC. Go to Step 10 and restart. If it does not match upon restart, Have your System Unit serviced.

Step 14.

- o Select a diagnostic routine (or all of them) by pressing the appropriate function key.

You may choose to stop testing after the first error is found or you may run Diagnostic Tests for all components and check for all possible errors.

---

Note:

Write down the exact error messages. Your service technician needs this information.

---

## **DIAGNOSE.COM**

The program DIAGNOSE.COM lets you test each fundamental part of your computer to make sure it is working as expected. The program is completely menu driven and reports errors in English instead of in "ERROR CODES" that generally mean nothing to anybody except the creator of the program.

To run the program put your Diagnostics disk in Drive A and type:

**DIAGNOSE RETURN**

### **The Diagnostics Menu**

With the exception of the monitor test screens, DIAGNOSE should use this screen layout:

-----  
screen art:

00:43:44 07-04-85 LEADING EDGE DIAGNOSTICS PROGRAM VERSION  
#.#

---

messages

error

---

active screen area

valid keystrokes

-----  
The terms "active screen area", "error messages", and "valid keystrokes" are used throughout this document and refer to the locations shown above.

When DIAGNOSE is run, the active screen area displays a list of the hardware that the computer believes to be installed in itself. The possible entries in the list are defined below.

- o keyboard
- o time of day clock
- o amount of system memory
- o mode of internal graphics display port (color or monochrome)
- o number of floppy disk drives
- o number of hard disk drives
- o number of serial communication ports
- o number of parallel printer ports
- o presence of numerical data processor

Check the list very carefully. If the list is incorrect, press **ESC** to stop the program and check the DIP switches on your System Unit motherboard.

See Appendix A, Switch Settings for more information.

Reset any DIP switches that are incorrect and try again. If the list is correct, press **EXECUTE** to continue. The **EXECUTE** key is the large '+' key on the right hand side of your keyboard. Pressing any other key produces an error. The speaker beeps and the error message

You have not hit a valid key!!

is displayed.



Each block represents a key on the keyboard. When you press a key, the corresponding block is filled in with a letter or number that describes the key. If you hold the key down the character representing the key flickers until you let the key go. After you have pressed all of the keys the screen should look like this:

```
1 2   e 1 2 3 4 5 6 7 8 9 0 - = b ` n s
3 4   t Q W E R T Y U I O P [ ] 7 8 9 -
5 6   c A S D F G H J K L ; ' r 4 5 6
7 8   ^ Z X C V B N M , . / ^ * 1 2 3 +
9 0   a \           S           c 0 .
```

If there are any blocks left up on the screen, then either you have not pressed that key yet or that key is not working properly. You can exit the test at any time by holding down **CTRL** and then pressing **F1**.

### **F3** = Printer

This test verifies that your computer can communicate with your parallel printer. Although it is not a complete test, it does make sure that your cable is not faulty and that the printer port is working.

You are first asked to pick which LPT port you wish to test.

Use the up and down cursor keys on the right hand side of your keyboard to make your choice and press **EXECUTE** when you have moved the cursor to the proper choice. Any other key produces an error.

If you picked an LPT port that is not installed in the computer, the speaker beeps and the error message:

```
There is no such port installed
```

is displayed.

If you chose a valid port, the test pattern appears in the active screen area and the computer attempts to print the whole screen to the printer. If there is a problem, the speaker beeps and the error message:

```
PRINTER ERROR Check Connections
```

is displayed. This could mean any of the following:

- (1) Printer cable bad or disconnected
- (2) Printer turned off or deselected
- (3) Printer bad
- (4) Printer port bad

You can try to print again by pressing **EXECUTE** or stop the test with **ESCAPE**. Any other key produces an error.

If there is no problem, the whole screen is printed.

Compare the printer output to the screen and note any differences.

---

**Note:**

If you do not have an IBM-compatible graphics printer, the solid horizontal lines are printed out as some other character. This character is ASCII 196. Check your printer manual for this character.

---

You can try to print again by pressing **EXECUTE** or stop the test with **ESCAPE**.

Any other key produces an error.

#### **F4 = Communications Chip(s)**

The 8250 Asynchronous Communications Controller Chip is the functional workhorse of the serial port and is tested in a loopback mode. This means that all of the output signals of the chip are fed back into the inputs of the chip and compared for equality.

The first five Communications Chip test screens allow you to choose the baud rate, parity, number of stop bits, word length, and COM port.

These parameters tell the computer which port you are testing and how the 8250 is to be initialized. The method of choosing these values is the same as choosing the LPT port described in the previous test.

If you picked a COM port that is not installed in the computer, the speaker beeps, the error message:

There is no such port installed

is displayed, and you return to the baud rate selection screen.

If you have selected a valid COM port, then the test begins.

The active screen area displays one of the following messages:

THERE WERE NO ERRORS ENCOUNTERED IN TEST  
TIMEOUT ERROR! NO CHARACTER RECEIVED  
TIMEOUT ERROR! NO CHARACTER TRANSMITTED  
OUTPUT SIGNALS AND INPUT SIGNALS DO NOT MATCH  
FRAMING ERROR HAS OCCURRED  
PARITY ERROR HAS OCCURRED  
OVERRUN ERROR HAS OCCURRED  
BREAK ERROR HAS OCCURRED  
RECEIVED CHARACTER AND TRANSMITTED CHARACTER DIFFER

With the exception of the first message all of the above show that there was some type of error that was encountered during the test.

The test continues to run until you press **ESCAPE** to stop the test entirely or you press **EXECUTE** to choose new parameters.

If you press any other key, an error is reported and the test continues as if nothing had happened.

#### **F5 = Monitor**

The built-in graphics display port is tested in either the monochrome mode, the color mode, or both modes. The method of choosing which mode to test is the same as choosing the LPT port described earlier. Each of the sections is described below.

#### **Monochrome Mode**

##### **(1) Screen memory test**

This portion of the test verifies that the display memory can be written to and read from properly.

If successful, displays "SCREEN MEMORY TEST PASSED".

Press any key to continue to step 2.

If unsuccessful, displays "SCREEN MEMORY TEST FAILED".

Pressing any key stops the program since rest of test is not reliable due to bad memory.

(2) 80 column character test

Displays all 256 characters on the screen.

Check these with the chart in the technical reference section of this manual and press any key to proceed to step 3.

(3) Attribute test

Displays all possible attributes available with monochrome mode. Adjust your contrast and brightness knobs on your monitor so that the HIGH INTENSITY text is brighter than the NORMAL text.

Check to see if the BLINKING text is blinking, the UNDERLINED text is underlined, and the REVERSED text is reversed.

Press any key to proceed to step 4.

(4) Alignment test

Displays a pattern of horizontal and vertical lines. Adjust your vertical size, horizontal size, horizontal positioning, and vertical linearity knobs on your monitor so that the squares are all of the same size, the pattern is centered on the screen, and none of the pattern runs off of the screen.

Press any key to proceed to step 5.

(5) 720x348 graphics test

The triangular LEADING EDGE logo is displayed with "monochrome graphics" at the top of the screen and "hit any key" at the bottom of the screen. Pressing any key leaves the monitor test and brings the original screen format with menu back up on the monitor.

## Graphics Port

### (1) Screen memory test

This portion of the test verifies that the display memory can be written to and read from properly.

If successful, displays "SCREEN MEMORY TEST PASSED".

Press any key to continue to step 2.

If unsuccessful, displays "SCREEN MEMORY TEST FAILED".

Pressing any key stops the program since rest of test is not reliable due to bad memory.

### (2) 80 column character test

Displays all 256 characters on the screen.

Check these with the chart in the Technical Reference section of the Leading Edge Guide To Operations and press any key to proceed to step 3.

### (3) Color test

Displays all sixteen colors in text mode with the name of each color above it. Adjust your brightness and color knobs on your monitor to achieve the labeled colors.

Press any key to proceed to step 4.

### (4) Alignment test

Displays a pattern of horizontal and vertical lines. Adjust your vertical size, horizontal size, horizontal positioning, and vertical linearity knobs on your monitor so that the squares are all of the same size, the pattern is centered on the screen, and none of the pattern runs off of the screen.

Press any key to proceed to step 5.

(5) 80 column paging test

Press any key to start filling pages. The screen fills with the message:

    this is page ?

After a short period of time the program increments the page value and then display the next page. There are 4 pages in all. Step 6 is executed after the 2nd page.

(6) 40 column character test

Same as 80 column character test except that characters are twice as wide.

Press any key to proceed to step 7.

(7) 40 column paging test

Same as 80 column paging test except that characters are twice as wide and there are 8 pages in all. Step 8 is executed after the 4th page.

(8) 320X200 graphics test

Four bands of colors, each representing one of the four colors in the palette, are displayed.

Pressing any key changes the palette.

There are 4 palettes in all.

Step 9 is executed after palette 4.

(9) 640x200 2 color graphics test

Two bands of colors (white and black) are displayed.

Pressing any key takes you to step 10.

(10) 640x200 16 color graphics test

Sixteen bands of colors, each representing one of the colors in this mode are displayed.

Pressing any key leaves the monitor test and brings the original screen format with menu back up on the monitor.

**F6 = Memory**

The total amount of system board memory and option board memory are tested at this point. During this test the running time in the upper left hand corner of the screen is halted. It starts again when the test has completed. The system board memory is always tested and if there is any optional memory installed, that is also checked.

At the end of the test one of these messages appears:

MEMORY TEST PASSED  
or  
MEMORY TEST FAILED

If there were errors found with the installed memory, then this memory chip map appears:

	P	8	7	6	5	4	3	2	1
BANK0									
BANK1									
BANK2									
BANK3									
BANK4									
BANK5									
BANK6									
BANK7									
BANK8									
BANK9									

REPLACE THESE CHIPS !

This is a representation of your system memory. If the program found a chip to be malfunctioning, then the corresponding row and column in the chart is filled in with an 'X'. If a whole row of the chart is filled with X's, it is very unlikely that all those chips are bad. It is more likely to be a fault in the other circuitry on the board.

BANK0 starts on your system mother board and BANK9 is the last bank of optional memory that can be installed. The numbers across the top of the chart correspond to the individual data and parity bit chips within a bank of memory.

Whether the test passed or failed, press **EXECUTE** to continue. Any other key produces an error.

**F7** = Floppy Drive(s)

Before the test begins you must insert "scratch" (blank or unimportant) diskettes in the drive or drives you are about to test.

---

**Warning:**

DO NOT LEAVE THE DIAGNOSTIC DISK IN THE DISK DRIVE! THE TEST ERASES EVERYTHING ON DISK WHEN IT PERFORMS THIS TEST.

---

Press **EXECUTE** to continue or **ESCAPE** to stop the test. Any other key causes an error.

If you only have one floppy disk drive installed in your system, the test immediately begins testing Drive A. If you have more than one floppy drive, you are asked to choose between testing DRIVE A, DRIVE B, OR BOTH DRIVES.

The choice is made in the same manner as the LPT port in the printer test. Once you have made your choice, the selected drive begins testing or, if the both drives option was selected, Drive A begins testing.

The test begins by doing a check of the spindle speed on the drive. This is the motor that makes the disk rotate and must be spinning at a predetermined rate so that disks can be read correctly. When this check is completed, one of the following messages is displayed:

DISK SPEED TEST PASSED

or

DISK SPEED TEST FAILED

Press **EXECUTE** to continue or **ESCAPE** to stop the rest of the test.

The random read/write test is then executed. This verifies that the blank disk can be written to and read from properly. During the test the active screen area displays the drive, head, track, and sector value that is currently under test. It also displays the function (writing, reading, verifying) that it is currently executing.

If you are testing both drives, you must press **EXECUTE** to go to the next drive or **ESCAPE** to stop the test.

After Drive B has completed its test, you are asked to swap the disks in drives A and B. This part of the test makes sure that both disk drives can read disks written to by either of the drives. Press **EXECUTE** to start this compatibility test or **ESCAPE** to stop. Any other key produces an error.

If you are only testing one drive or the compatibility test has completed, then press **EXECUTE** or **ESCAPE** to leave the test. Any other key produces an error.

Should an error occur during any part of the floppy disk test, an error message is displayed and you are asked to make a choice.

Pressing **ESCAPE** stops the test entirely. Pressing **EXECUTE** causes the test to do a retry at the beginning of the track that is currently under test. The following is a list of the possible error messages that could appear.

BAD NEC COMMAND	DMA BOUNDARY ERROR
MISSING ADDRESS MARK	CRC ERROR
WRITE PROTECT ERROR	FAULTY NEC765
RECORD NOT FOUND ERROR	SEEKING ERROR
DMA TRANSFER ERROR	READ WRITE COMPARE ERROR

**F8** = Fixed Drive

If you do not have a fixed disk drive installed in your system, this test does not execute. The fixed disk test is similar to the floppy disk test. The first screen gives you an estimate of time that the program requires to accomplish its test. Press **EXECUTE** to continue or **ESCAPE** to stop.

If you only have one fixed disk installed in your system, the test immediately begins testing fixed disk drive 0. If you have more than one drive, the next screen asks you to choose between testing **HARD DRIVE 0**, **HARD DRIVE 1**, OR **BOTH DRIVES**.

The choice is made in the same manner as the LPT port in the printer test. Once you have made your choice, the selected drive then begins testing or, if the both drives option was selected, fixed disk 0 starts testing.

The very first part of the test is a check of the the sector buffer RAM and the internal hardware of the fixed disk controller.

The following messages are displayed.

RAM Diagnostics PASSED  
or  
RAM Diagnostics FAILED  
and  
Controller Internal Diagnostics PASSED  
or  
Controller Internal Diagnostics FAILED

If either of these two tests failed, then an error message is also displayed and pressing either **ESCAPE** or **EXECUTE** stops the fixed drive test entirely.

No other part of the test can be executed without the successful completion of these two tests. If both of the above tests passed, the verifying check begins. This attempts to read each and every sector on the fixed disk.

A tally of bad sectors is kept and is displayed after all the sectors have been checked. You can exit the entire test at this time by pressing **ESCAPE**.

A short write test is then executed to assure that the write circuitry is working. The test displays one of the following:

READ/WRITE Test PASSED  
or  
READ/WRITE Test FAILED

Press **EXECUTE** to continue or **ESCAPE** to stop. Any other key causes an error.

Should an error result in any part of the test, an error message is displayed and pressing **ESCAPE** stops the whole test or pressing **EXECUTE** continues to the next sector. The error messages include the following:

UNKNOWN ERROR CODE  
No Index Signal from Drive  
No Seek Complete Signal from Drive  
Write Fault Signal Received from Drive  
Drive not Ready  
Track 00 not Found  
ID Field Read Error \*  
Uncorrectable Data Error in Data Field \*  
Sector Address Mark not Found \*  
Target Sector not Found \*  
Seek Error \*  
Correctable Data Error  
Track is Flagged Bad \*

Invalid Command  
Illegal Disk Address  
Illegal Parameter  
RAM Error  
Program Memory Checksum Error  
ECC Polynomial Error

The error messages with the asterisks after them are those errors that constitute a "bad sector" and increases the tally mentioned earlier.

If you get a "Correctable Data Error" , this means that the test hit an area that had an error but it was able to correct that error and it no longer exists. The last three errors should only result from the Ram Diagnostic Test or the Controller Internal Diagnostics Test.

---

Notes:

If the test has found bad sectors on your fixed disk, do not jump to the conclusion that there is a problem with your fixed disk drive. All fixed disk drives contain some bad sectors. These sectors are "hidden" from the system and are not used.

If your system does not encounter any errors during normal use, then do this:

Run the fixed disk drive test and keep a record of all the sectors that are found to be bad. Later, if you suspect that something is wrong, you can check to see if the test finds any sectors that were not on your original list of bad sectors.

You should make a new list every time you FORMAT your fixed disk drive.

---

**F9 = Test All**

This function is a way of running all the tests without having to press each function key individually. The individual tests are executed in the same order as they appear in the menu.

## **F10 = Park Fixed Drive Heads**

This function does not execute if you do not have a fixed drive installed in your system. "Parking" the fixed drive is a way of securing the extremely fragile heads that read from and write to the disk.

---

### **Warning:**

You **MUST ALWAYS** "park" the fixed disk drive read/write heads whenever you intend to move your System Unit, even if just to the next room. This prevents any possible physical damage or data loss from the heads striking the highly sensitive data surfaces of the fixed disk.

---

The message "The Fixed Drive heads will be moved to the shipping zone" is displayed. Pressing **ESCAPE** sends you back to the menu and pressing **EXECUTE** lets you proceed. Any other key produces an error. "EXECUTING PARKING PROCEDURE..." appears on the screen. When the message "THE HEADS HAVE BEEN PARKED YOU CAN TURN THE SYSTEM OFF NOW!!!" appears the process has completed. When the system is turned back on, the heads are "unparked" automatically.

### **Summary**

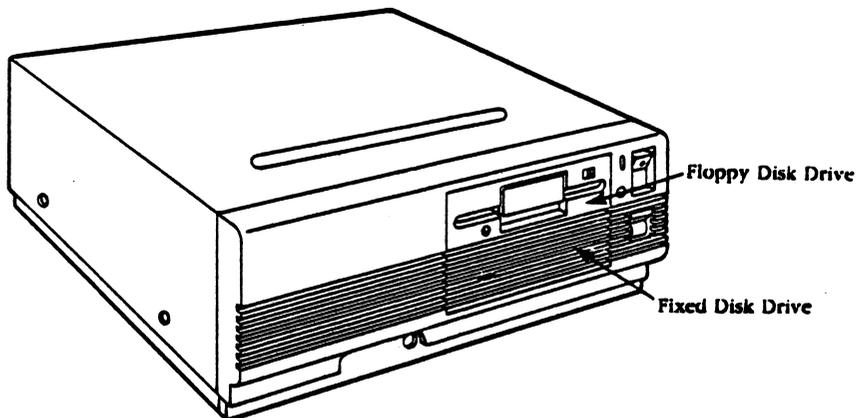
This is the end of the Diagnostic Procedures. If your Leading Edge Model D computer has passed all these tests, it is ready to perform your tasks now.

If your computer is still not operating properly, contact the dealer where you purchased your Leading Edge Model D for additional help.

## Chapter 5 If You Have a Fixed Disk System

This chapter of the Guide To Operations is for those of you who have a fixed disk-based system.

A Leading Edge Model D fixed disk system has a single floppy disk drive and another disk drive that cannot be removed.



If your Leading Edge Model D system has a fixed disk drive you should carefully read this chapter.

A fixed disk stores about 30 times more data -- and retrieves it faster -- than a floppy disk.

On the Diagnostics disk included with your Leading Edge Model D system is a program named PREPARE.COM. Using the PREPARE.COM program is a shortcut to setting up your fixed disk system exclusively for MS-DOS.

PREPARE.COM formats your fixed disk drive entirely for MS-DOS and places the MS-DOS system on it. Also, if there are any "bad sectors" on your fixed disk drive, they are "hidden" from the system.

Don't worry. All fixed disk drives have some bad sectors.

If fixed disk bad sectors aren't hidden, then the system does not even know they are there, so it tries to use them. This could be very bad for your data or program files.

To run PREPARE.COM put your Diagnostic disk in Drive A and type:

PREPARE RETURN

The following message appears on the screen:

The Leading Edge Fixed Disk Preparation program  
Version x.xx

```
*****  
**      WARNING,WARNING,WARNING      **  
*****
```

Fixed Drive will be Formatted for MS-DOS  
ALL DATA WILL BE LOST  
Are you sure you want to do this?

Pressing "Y" continues with the program, any other key stops the program. If you type "Y", you are prompted:

Which Fixed Disk unit do you wish to format (0 or 1)?"

Pressing any other key than "0" or "1" causes the question to be displayed again.

"0" causes the first fixed disk unit to be formatted and "1" causes the second fixed disk unit to be formatted. In either case the next line you should see is:

Formatting .....

After the formatting procedure is done the next message you see is:

Verifying...

This part of the program checks to see that the format procedure has done its job. If any bad sectors are found their presence is noted and are hidden later.

Once the verification is complete, you are asked to press any key to begin transferring System files from the Diagnostics disk to the fixed disk drive.

After you press a key, the floppy disk in Drive A is read and the needed files are transferred. If the message

System Reserve Area BAD Format Aborted

appears, this means that the area of the disk where the MS-DOS system should reside is bad and the program cannot put this information there. PREPARE.COM stops in this case.

The message:

FORMAT COMPLETE

means that everything was accomplished without error.

If an error is encountered during any part of the test, a message is displayed on the screen.

If you see:

TIMEOUT ERROR

this is a very severe problem. The program stops right away.

Other errors that might appear are:

No Index Signal from Drive  
No Seek Complete Signal from Drive  
Write Fault Signal Received from Drive  
Drive not Ready  
Track 00 not Found  
ID Field Read Error \*  
Uncorrectable Data Error in Data Field \*  
Sector Address Mark not Found \*  
Target Sector not Found \*  
Seek Error \*  
Correctable Data Error  
Track is Flagged Bad \*  
Invalid Command  
Illegal Disk Address  
Illegal Parameter  
RAM Error  
Program Memory Checksum Error  
ECC Polynomial Error  
UNKNOWN ERROR CODE

The messages with asterisks after them are those errors that constitute a bad sector. These bad sectors are locked out-of-use during the FORMAT.

The "Correctable Data Error" message means that PREPARE.COM found an area on the disk that contained an error but was able to correct the error and it no longer exists.

Different types of fixed disk drives can be used with this program by simply changing the option jumpers on the fixed disk drive controller board. Refer to Appendix C, Fixed Disk Drive Technical Specifications, and/or the owner's manual for your fixed disk for more information.

Since PREPARE.COM sets up the whole disk for MS-DOS, you can not partition your fixed disk drive for other operating systems. If you wish to partition your fixed disk drive for other operating systems then you must do the following:

- (1) Run PREPARE as described above.
- (2) When you see the message:  
"Hit any key to begin transferring  
system files to Fixed Drive unit"  
turn the System Unit OFF.
- (3) Place your MS-DOS System disk in Drive A  
and turn the System Unit ON.
- (4) Type FDISK to set up your partition.
- (5) Last, use FORMAT to format the MS-DOS partition.

The details on steps 4 and 5 are explained in your Guide To MS-DOS under the FDISK and FORMAT commands.

### **Organizing Your Fixed Disk**

The information described below is a group of "helpful hints" about using a fixed disk drive. For new computer users, or users who haven't used fixed disks before, it is sometimes a challenge to put all available disk storage to best use.

MS-DOS can create subdirectories and sub-subdirectories to help you organize groups of files by some common attribute or usage. In the same way you place file folders in a multi-drawer filing cabinet, you can put your disk files into different areas of a fixed disk by defining subdirectories for file placement and storage.

When you issue the MS-DOS DIR command, a complete listing of all the files on the specified drive appears on the screen. What is displayed are all of the files on that disk or diskette. If you've been using your fixed disk for storage for all of your work and program files, this can be a very, very long listing.

The DIR command is showing you **everything** in the "root" directory on the fixed disk. If you've got several hundred files on the disk -- and this is not too difficult to do -- it is both time consuming and tedious to locate a specific file if you've forgotten its exact name and extension.

What's more, if there are a large number of files in the directory, system performance slows down when your computer is looking for a specific file.

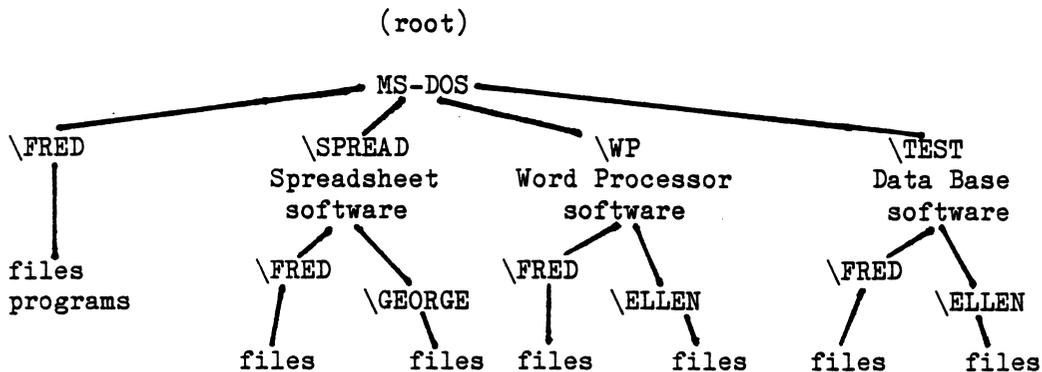
To solve these problems, you create subdirectories -- different drawers in your "filing cabinet". By establishing a path the DIR command can follow, you speed up processing. With faster processing you get your own work done more quickly.

### A Sample Multi-level Directory

The following illustration shows how a fixed disk subdirectory structure might be set up.

Let's say this is Fred's computer and George and Ellen work for Fred. They use his computer from time to time to prepare reports and budgets, so they have their own subdirectories. George is a plant manager and frequently works with a spreadsheet program. Ellen is a quality control manager and is involved with ongoing testing of the company's products.

Here is how Fred set up his disk directories.



In the root directory, Fred put the MS-DOS operating system and related programs. No matter who is using the computer, all of the MS-DOS functions are available.

There are four subdirectories.

- o A private directory for Fred
- o The Spreadsheet directory that contains the spreadsheet program and two sub-subdirectories
- o The Word Processing directory that contains the word processing program and two sub-subdirectories
- o The Test subdirectory and two sub-subdirectories that contain files about the products that Fred and Ellen review.

Fred mapped out the fixed disk directories before he assigned them names. Then he used the MD (Make Directory) and CD (Change Directory) commands to create this structure. Here's how he did it:

- (1) Loaded MS-DOS into memory.
- (2) Created his personal directory by typing:

```
MD FRED RETURN
```

This created the subdirectory FRED under the ROOT directory. Fred keeps his own programs and special files here.

After he starts his computer and the MS-DOS prompt appears, he types

```
CD\FRED
```

to get into his own directory.

- (3) To create the SPREAD subdirectory for the spreadsheet program and its subdirectories Fred typed:

```
MD C:\SPREAD
```

First, he created the subdirectory SPREAD under the root directory. Then he changed directory (CD) to SPREAD by typing

```
CD\SPREAD
```

Next, Fred typed:

```
MD\SPREAD\FRED
```

and

```
MD\SPREAD\GEORGE
```

To create a subdirectory for himself and for George. The MD command can also be entered as MKDIR.

- (4) Fred repeated this process for the word processing directory (WP) with the commands:

```
CD\      (return to ROOT directory)
```

Then he typed:

```
MD C:\WP
```

To Make a Directory on drive C: named "WP". He then used the Change Directory command to enter the new WP directory by typing:

```
CD\WP
```

and created two subdirectories for his people who would be using the word processing directory, WP by typing in the commands:

```
MD\WP\FRED
```

and

```
MD\WP\ELLEN
```

- (5) To complete the directory-building process Fred typed in the following commands to create subdirectories under the directory named TEST:

```
CD\  
MD C:\TEST  
CD\TEST  
MD\TEST\FRED  
MD\TEST\ELLEN
```

### Using Subdirectories

Whenever Ellen wanted to get into the files she was keeping on the products she was monitoring, she booted the system and typed:

```
A>CD\TEST\ELLEN
```

to identify the path to her personal subdirectory under the TEST directory, and

```
C>DIR
```

to display her directory listing of all files under that subdirectory so that she could select the file she wanted to work with.

By dividing up each user's files into subdirectories Fred provided an easy way for each computer user to access their own files out of the 200-odd files that were stored on the fixed disk. In this way, operation of the computer's file storage disk was speeded up, and making backup copies of each person's work files was made a good deal easier.

## Chapter 6 Moving Your Computer

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**Note:**

It is always a good idea to keep all your packing boxes and related materials for future use.

---

### For Fixed Disk Users

---

**Warning:**

If your computer is equipped with a fixed disk drive, you are strongly urged to use the PARK.COM program on the Diagnostics disk before you move your system from its original location.

---

### PARK.COM

The program PARK.COM is used to position the read/write heads within your fixed disk drive in a location where they cannot be harmed nor can the magnetic surfaces of the fixed disk be scarred when the System Unit is transported. This is called "parking" the heads.

The PARK.COM program should be run whenever you are moving your fixed disk system or are sending the unit in for repair.

---

**Note:**

The heads can also be parked from within the DIAGNOSE program.

---

To run the program put your Diagnostics diskette in a floppy drive and type:

#### PARK RETURN

The following message appears:

```
The Leading Edge Fixed Disk Parking Program
Version x.xx
THIS PROGRAM WILL PARK THE HEADS ON THE FIXED DISK DRIVE.
HIT ANY KEY TO CONTINUE
```

After you strike a key the process begins. When the heads have been parked, the message:

TURN SYSTEM OFF NOW!!!!

appears on the screen. When you again turn the system back on, the fixed disk heads are automatically unparked.

### **Packing Up**

If you plan to pack up your computer to ship long or short distances or to store, prepare the equipment as follows:

- (1) Turn all components OFF.
- (2) Disconnect all cords and cables.
- (3) Coil cables and tape them to the System Unit.

### **Moving Over Short Distances**

If you are moving your computer to a new location within your office or home it is not necessary to re-pack each component or accessory. It is suggested that you have a person to help you hold the doors open, etc., so that you can hold each piece of your system firmly with both hands.

Here are some short-distance pointers:

- o Clear enough space at the destination site, before you move the computer, to accomodate each piece set side-by-side.
- o Unplug and/or uncable every external cable before you begin.
- o Move the System Unit first, then each major accessory.

## Shipment Over Long Distances

- (1) Package each component separately.
- (2) Pack units in original cartons and use all the original packing materials (foam cushions, braces, plastic sleeves, etc.)

---

**Note:**

Always save packing boxes and materials!

---

- (3) If you don't have the boxes the equipment came in and must use other cartons, make sure you cushion each component carefully.

## Re-setup

Unpack the components with care at the new location, and save the packing materials.

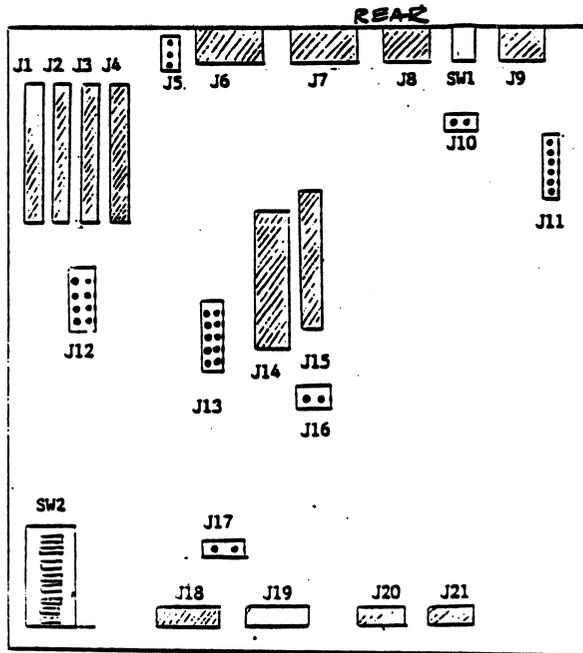
Follow the instructions for Setup and System Checkout (see Chapter 2). It is recommended that you use the Diagnostic disk that came with your system to check functional operation before attempting to do any serious work after a move.

## Appendix B Switch Settings

This appendix describes the switches and jumpers on the main circuit board (motherboard) of your Leading Edge Model D.

Your computer is equipped with three switches:

- o Power ON/OFF switch on the front panel.
- o COLOR/MONO switch on rear panel (SW1).
- o 8-slider DIP switch on the motherboard (SW2).



### Color/Monochrome Switch

Use the COLOR/MONO switch on the rear panel to select the display monitor type that you are using. This switch also works with switches 5 and 6 on SW2.

SW1	UP	Monochrome display selected
SW1	DOWN	Color display selected

## Configuration Switch

The 8-slider DIP switch (SW2) located in the front left corner of the mother board controls the following:

- o numeric coprocessor installation
- o installed memory
- o # of installed diskette drives.

Slider #	OFF	ON	Configuration
1	o		Not used. Leave OFF
2	o	o	8087 coprocessor mounted 8087 coprocessor not mounted (coprocessor socket: U58)
3	o		All memory tested at power ON
4		o	(see note below)
3		o	All memory tested at power ON
4	o		
3	o		All memory tested at power ON
4	o		
3		o	Only first 64K of memory tested
4		o	at power ON (see note below)
5	o		Leave both OFF and select
6	o		COLOR/MONO with SW1 on rear panel
7		o	1 floppy disk drive
8		o	
7	o		2 floppy disk drives
8		o	
7		o	3 floppy disk drives
8	o		
7	o		4 floppy disk drives
8	o		

Sliders 3 and 4 are ignored by the ROM BIOS at boot unless they are both set ON. The ROM BIOS in your Leading Edge Model D checks to see how much memory is installed regardless of the settings of these sliders. However, if 3 and 4 are ON, the Memory Test is limited to the first 64Kb of RAM. If you want to speed up the time it takes to start up your system, set 3 and 4 ON, otherwise, the Memory Test continues until all of the memory installed has been tested. With a fully-configured 640Kb memory, the Memory Test takes approximately 35 seconds.

### Circuit Board Configuration Jumpers

The Leading Edge Model D motherboard contains several jumpers used to configure the system for specific functions. These are:

J10 Enables/disables the system board monitor controller. Remove this jumper if you are installing a separate monitor controller in one of the expansion slots.

J11 6-pin connector for a light pen.

J12 TOD clock, interrupt request selection.  
1-5 IRQ2 selected (default)  
2-6 IRQ3 selected  
3-7 IRQ4 selected  
4-8 IRQ5 selected

If you want to select any interrupt other than IRQ2, you must also cut the trace between pins 1 and 5. Doing this VOIDS the warranty on the system unless this operation is performed by Leading Edge Hardware Products Repair Department.

J13 Enables/disables the I/O controllers on the system board. If the jumper is removed, the specific I/O device is disabled. Remove a jumper if you are installing a separate I/O controller in one of the expansion slots.  
1-6 Asynchronous Communications Controller  
2-7 Floppy Disk Controller  
3-8 Parallel Printer Controller  
4-9 Real Time Clock  
5-10 not used

J16	Installed ROM size	
	If <u>no</u> jumper (default)	8K ROM
	If jumper installed	32K ROM
J17	Installed RAM size	
	jumper installed	64K RAM chips
	jumper removed	256K RAM chips