

MultiSpeed

User's Guide

NEC

MULTISPEED POWER-ON CHECK LIST:

(A detailed explanation of the power-on procedure for the MultiSpeed is shown in the User's Guide.)

1. Make sure the NiCd Battery is inserted properly or that the AC Adapter is connected.
2. Turn the BACK UP POWER switch on the rear of the MultiSpeed to the ON position.
3. Check the CONFIG switch settings on the rear of the MultiSpeed.
Switch 1, 3, 4: OFF Switch 2: ON
4. When using battery power only, recharge the NiCd Battery Pack for 8 hours before using it. However, when the AC Adapter is connected, the NiCd Battery Pack is automatically recharged and if desired, you may continue to run the system.
5. Peripheral devices such as a printer, for example, should be connected properly and turned off before you turn on the MultiSpeed.
(Do not turn on peripheral devices until after the MultiSpeed is turned on.)
6. Insert the MS-DOS system diskette in drive A and turn on the POWER switch on the left side of the MultiSpeed.

YOU ARE NOW READY TO READ THE MULTISPEED MANUALS AND BECOME MORE FAMILIAR WITH YOUR NEW COMPUTER!

MultiSpeed

User's Guide

NEC

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NOTICE

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception.

It has been type tested and found to comply with Part 68 and the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation.

If the equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna
- Relocate the computer with respect to the receiver
- Move the computer away from the receiver
- Plug the computer into a different outlet so that the computer and receiver are on different branch circuits

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the US Government Printing Office, Washington, D.C., 20402.

WARNING

This equipment has been certified to comply with Part 68 and 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, etc.) certified to comply with Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

INTERCONNECTING CABLES

The optional 300/1200 BPS Modem is installed in the MultiSpeed.

The following cables were used in tests:

RS-232C Cable (normal)	PC-16-95
RS-232C Cable (reverse)	PC-16-96
Printer Cable	PC-16-94
Phone Cable	PC-8499A-04
External Transfer Cable Kit	PC-16-97

The central office was connected via the Phone Cable (PC-8499A-04).

Operation without the cables described above could violate FCC rules and regulations.

FCC REQUIREMENTS

TYPE OF SERVICE

Your MultiSpeed is designed to be used on standard device telephone lines. Connection to a coin-service telephone (central office implemented systems) provided by a telephone company is prohibited. Connection to party lines service is subject to state tariffs.

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The goal of the telephone company is to provide you with the best possible service. In order for them to do this, it may occasionally be necessary for them to make changes to their equipment, operations or procedures. If these changes might affect your service or the operation of your equipment, the telephone company will give you notice, in writing, to allow you to make any necessary changes to maintain uninterrupted service.

If you have any questions about your telephone line, such as how many pieces of equipment you can connect to it, the telephone company will provide this information on request.

In certain circumstances it may be necessary for the telephone company to request information from you concerning the equipment which you have connected to your telephone line. Upon the telephone company's request, please provide the FCC registration number and the ringer equivalence number (REN) of the equipment which is connected to your line. Both of these items are listed on the equipment label. The sum of all the RENs on your telephone lines should be less than five in order to assure proper service from the telephone company, in some cases, even a sum of five may not be used on a given line.

IF PROBLEMS ARISE

If any of your telephone equipment is not operating properly, you should immediately remove it from your telephone line as it may cause harm to the telephone network. If the telephone company notes a problem, they may temporarily discontinue service. When practical, they will notify you in advance of such disconnection. If advance notice is not feasible, you will be notified as soon as possible. When you are notified, you will be given the opportunity to correct the problem, and you will be informed of your right to file a complaint with the FCC.

If your MultiSpeed needs repair, it should be performed by NEC Home Electronics U.S.A. Inc., or by an authorized representative of NEC Home Electronics U.S.A. Inc.

For more information, please contact:

NEC Home Electronics (U.S.A.) Inc.
1255 Michael Drive
Wood Dale, Illinois 60191-1094

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NOTEPAD	Copyright (c) 1986 NEC Corporation
FLER	Copyright (c) 1986 NEC Corporation
OUTLINER	Copyright (c) 1986 NEC Corporation
DIALER	Copyright (c) 1986 NEC Corporation
SETUP	Copyright (c) 1986 NEC Corporation
MENU	Copyright (c) 1986 NEC Corporation
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The SOFTWARE means the above computer programs contained in the MultiSpeed in read only memory (ROM) format, disk format and the manuals which are delivered with MultiSpeed.

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NEC Home Electronics (U.S.A.) Inc. (hereafter NECHE) warrants this product to be free from defects in material and workmanship under the following terms.

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Labor is warranted for (1) One Year from the date of the first consumer purchase. Parts are warranted for (1) One Year from the date of the first consumer purchase.

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This warranty may be enforced only by the first consumer purchaser.

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2. Any product on which the serial number has been defaced, modified or removed.
3. Damage, deterioration or malfunction resulting from:
 - a. Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature, commercial or industrial use, unauthorized product modification, or failure to follow instructions supplied with the product.
 - b. Repair or attempted repair by anyone not authorized by NECHE.
 - c. Any shipment of the product (claims must be presented to the carrier).
 - d. Removal or installation of the product.
 - e. Any other cause which does not relate to a product defect.
4. Cartons, carrying cases, batteries, external cabinets, magnetic tapes or any accessories used in connection with the product.

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay all labor and material expenses for covered items, but we will not pay for the following:

1. Removal or installation charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls. These costs are the responsibility of the NECHE dealer from whom the product was purchased.

Payment of shipping charges is discussed in the next section of this warranty.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on your product, take or ship it to any authorized NECHE service center.
2. Although you must pay any shipping charges if it is necessary to ship the product for warranty service, we will pay the return shipping charges if the repairs are covered by the warranty.
3. Whenever warranty service is required, the original dated sales slip (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing, your name, address, and a description of the problem(s).
4. For the name of the nearest NECHE authorized service center, contact your dealer or NECHE.

LIMITATION OF IMPLIED WARRANTIES

ALL IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE LENGTH OF THIS WARRANTY.

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NECHE'S LIABILITY FOR ANY DEFECTIVE PRODUCT IS LIMITED TO THE REPAIR OR REPLACEMENT OF THE PRODUCT AT OUR OPTION. NECHE SHALL NOT BE LIABLE FOR:

1. DAMAGE TO OTHER PROPERTY CAUSED BY ANY DEFECTS IN THIS PRODUCT, DAMAGES BASED UPON INCONVENIENCE, LOSS OF USE OF THE PRODUCT, LOSS OF TIME, COMMERCIAL LOSS; OR
2. ANY OTHER DAMAGES, WHETHER INCIDENTAL, CONSEQUENTIAL OR OTHERWISE.

SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS AND/OR DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS AND EXCLUSIONS MAY NOT APPLY TO YOU.

HOW STATE LAW RELATES TO THE WARRANTY

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

TO HAVE YOUR PRODUCT SERVICED, TELEPHONE TOLL-FREE: 1-800-632-8324

FOR ALL OTHER INFORMATION, TELEPHONE TOLL-FREE: 1-800-323-1728

NOTE: All products returned to NECHE for service MUST have prior approval, this may be obtained by calling our Toll-Free Service number above.

Preface

The MultiSpeed packs portability and power, making it one of the most exciting innovations in today's computer market. The MultiSpeed runs under Microsoft Corporation's MS-DOS operating system (version 3.2) and supports most major software written for MS-DOS PCs.

The MultiSpeed comes with six versatile built-in application programs that can be used at home or in the office. With its full line of peripherals, it can also be used as a complete desk top unit.

These manuals are written for novice and experienced computer users. Technical information and specifications for experienced users are found in the appendices.

TABLE OF CONTENTS

CHAPTER 1 INTRODUCTION

1.1 RESIDENT PROGRAMS	2
1.2 HOW TO USE YOUR DOCUMENTATION	3
1.2.1 Signs, Symbols and Warnings	3
1.2.2 Keytops in Text and Messages	4
1.2.3 Screen Examples	5
1.3 STANDARD FEATURES OF THE MULTISPEED	6
1.4 OPTIONAL FEATURES	7

CHAPTER 2 GETTING STARTED

2.1 UNPACKING THE MULTISPEED	10
2.2 FAMILY OF COMPONENTS	13
2.3 OPTIONAL COMPONENTS	14
2.4 OPENING AND ADJUSTING THE LCD COVER	17
2.5 OPERATING CONDITIONS	19
2.6 A CLOSE INSPECTION OF THE MULTISPEED	20
2.6.1 Parts and Indicators (Front View)	20
2.6.2 Connectors and Switches (Rear and Side View)	21
2.6.3 The Keyboard	24
2.7 DISKETTE HANDLING AND CARE	29
2.7.1 Cautions	29
2.7.2 Write-protect Switch	30
2.7.3 Mounting and Removing Diskettes	31

CHAPTER 3 CONNECTION PROCEDURES

3.1 POWER SOURCES	34
3.1.1 Rechargeable NiCd Battery Pack	34
3.1.2 The AC Adapter and Car Battery Cable	35
3.1.3 The Battery Indicator	37
3.2 BACK UP POWER Switch	38
3.3 CONFIG SWITCH SETTINGS	39

CHAPTER 4 BOOTING THE MultiSpeed

4.1 POWER ON AND OFF	42
4.1.1 Check List	42
4.1.2 Mount the MS-DOS System Diskette	42
4.1.3 Power On	43
4.1.4 Adjust LCD Brightness	44
4.1.5 Power Off	44
4.2 RESET	45

CHAPTER 5 MS-DOS

5.1 THE OPERATING SYSTEM	50
5.2 WRITE-PROTECT YOUR SYSTEM DISKETTE	51
5.3 STARTING UP MS-DOS	52
5.4 FORMATTING A DISKETTE	54
5.5 COPY YOUR SYSTEM DISKETTE	56

CHAPTER 6 MULTISPEED PROGRAM TUTORIAL

6.1 INTRODUCTION	60
6.1.1 Help	60
6.1.1.1 The HELP Key	60
6.1.1.2 The HELP Window	61
6.1.1.3 The Help Command	61
6.1.1.4 The Help Line	61
6.1.2 Selecting a Command	62
6.1.3 Before You Begin	63
6.2 NOTEPAD	64
6.2.1 Edit Mode	64
6.2.2 Insert and Non-Insert Mode	65
6.2.3 Command Mode	65
6.2.4 Starting NOTEPAD	66
6.2.5 Inserting Text	68
6.2.6 Right Justify	69
6.2.7 Cut and Paste	69
6.2.8 Search	71
6.2.9 Save	73
6.3 FILER	75
6.3.1 Starting FILER	75
6.3.2 Command Selection	76
6.3.3 Designing a Format Card	76
6.3.4 Typing Data Cards	79
6.3.5 Saving the File	81
6.3.6 Quitting FILER	83
6.4 OUTLINER	84
6.4.1 Starting OUTLINER	85
6.4.2 Editing an Outline	85
6.4.3 Insert	86
6.4.4 Moving the Highlighted Cursor	88
6.4.5 Cut	88
6.4.6 Paste	89
6.4.7 Fold	90
6.4.8 Expand	91
6.4.9 Save	92

6.5 DIALER	93
6.5.1 Starting DIALER	93
6.5.2 Selecting a DIALER Command	93
6.5.3 Typing a Phone Directory	94
6.5.4 Moving the Highlighted Cursor	97
6.5.5 Deleting Lines from the Phone Directory	97
6.5.6 Changing Phone Directory Entries	98
6.5.7 Quitting DIALER	99
6.5.8 Backing Up DIALER.DAT	100
6.6 RUNNING THREE PROGRAMS AT ONCE	102
CHAPTER 7 CONNECTING PERIPHERAL DEVICES	
7.1 PRINTER CONNECTION	108
7.2 TELCOM AND DIALER CONNECTIONS	109
7.2.1 Connecting the Built-In Modem	109
7.2.2 External Modem Connection	110
7.3 MONITOR CONNECTION AND SETTINGS	112
7.3.1 Type of Monitor to Use	112
7.3.2 Connecting the Monitor	112
7.3.3 Removing and Assembling the LCD Cover	116
7.3.3.1 Removing the LCD Cover	116
7.3.3.2 Assembling the LCD Cover	118
7.4 THE MULTISPEED AS EXTERNAL DRIVES	120
7.4.1 Connect to EXT FDC Port	120
7.4.2 Confirm Your Version of MS-DOS	121
7.4.3 CONFIG.SYS File for MS-DOS Version 3.2	121
7.4.4 CONFIG.SYS File for MS-DOS Versions 3.1 and Lower	123
7.4.5 SETUP for External Drives	124
7.4.6 When You're Finished Transferring Files	127
7.4.7 Disk Drive Designations	128
7.5 OTHER DATA TRANSFER PROGRAMS	129
CHAPTER 8 SETUP	
8.1 WHAT IS SETUP?	134
8.2 STARTING THE SETUP PROGRAM	136
8.2.1 Stand-Alone Program	136
8.2.2 Pop Program	137
8.2.2.1 MENU Window	137
8.2.2.2 Direct Start	137
8.2.3 Stopping SETUP	138
8.3 SETUP SCREEN DISPLAY	139
8.3.1 Parameter List	139
8.3.2 The Message Area	140
8.3.2.1 Command Line	140
8.3.2.2 Help Line	140
8.3.2.3 Prompt Line	140
8.3.3 Selecting a Command	141

8.4 INTERACTIVE HELP SYSTEM	142
8.5 SETUP COMMANDS	144
8.5.1 Clock Command	144
8.5.2 Drive Command	145
8.5.3 Exit Command	147
8.5.4 Fdc Command	148
8.5.5 Pop Command	149
8.5.5.1 RAM Disk Review	150
8.5.5.2 Setting Work Size	151
8.5.6 Quit Command	154
8.5.7 Ramdisk Command	155
8.5.7.1 RAM Disk Review	156
8.5.7.2 Changing Ramdisk Parameters	157
8.5.8 Screen Command	160
8.5.8.1 Active	161
8.5.8.2 Color	161
8.5.8.3 Exit	163
8.5.8.4 Intensity	163
8.5.8.5 Palette	164
 APPENDICES	
APPENDIX A: GENERAL HARDWARE SPECIFICATIONS	168
APPENDIX B: ELECTRICAL POWER SPECIFICATIONS	169
APPENDIX C: MULTISPEED 300/1200 BPS MODEM	170
APPENDIX D: I/O INTERFACES	172
APPENDIX E: MEMORY MAP	178
APPENDIX F: MULTISPEED CHARACTER CODES	179
APPENDIX G: TELCOM VT100 CHARACTER SETS	
G.1 U.S. Character Set	180
G.2 U.K. Character Set	181
G.3 Special and Line Drawing Character Set	182
APPENDIX H: PERIPHERALS COMPATIBLE WITH MULTISPEED	183
APPENDIX I: CONFIG SW SETTINGS	184
APPENDIX J: RAM640R.COM AND COLD.COM FILES	185
APPENDIX K: CONNECTION OF PERIPHERALS	188
INDEX	189

CHAPTER 1 INTRODUCTION

1.1 RESIDENT PROGRAMS	2
1.2 HOW TO USE YOUR DOCUMENTATION	3
1.2.1 Signs, Symbols and Warnings	3
1.2.2 Keytops in Text and Messages	4
1.2.3 Screen Examples	5
1.3 STANDARD FEATURES OF THE MULTISPEED	6
1.4 OPTIONAL FEATURES	7



1.1 RESIDENT PROGRAMS

The MultiSpeed comes equipped with five applications programs and one utility program (SETUP). These packages include:

- NOTEPAD An enhanced version of PC-8200 Text that includes a spell checking feature similar to PC-8500A Spell-To-Go. Basic text formatting is possible and the NOTEPAD can be used with the OUTLINER and TELCOM programs.
- FILER An enhanced version of the PC-8500 Filer. Search conditions can include relational operators.
- OUTLINER A handy tool for topic and sentence outlines. Ideal for organizing details and ideas to manage complex projects and reports.
- DIALER A utility that will dial a telephone number from a prepared phone directory. A telephone number can be typed for dialing, or selected from the directory. There is also an option to update the listing, so frequently used numbers appear first in the phone directory.
- TELCOM An enhanced version of PC-8500 Telcom. TELCOM is integrated with the NOTEPAD and the OUTLINER. It also supports command language for unattended communications. Multiple setup files are supported, and VT100 and other popular ASCII terminals can be emulated.
- SETUP An important tool that will help you to customize operating system parameters and set the size of the RAM disk.

Read this manual carefully after you unpack your MultiSpeed from its box.

1.2 HOW TO USE YOUR DOCUMENTATION

Read this manual first! The MultiSpeed User's Guide shows you what to do as soon as you unpack your new MultiSpeed. Connection procedures and basic operations are covered here in simple, easy-to-follow instructions. Quick introductions to MS-DOS and the built-in applications programs are covered in Chapters 5 and 6. The MultiSpeed User's Guide also explains how to set up and use MultiSpeed accessories. Be sure to read Chapter 8 (SETUP) because this is an important program you will need to know about before you use the other programs.

The OUTLINER, FILER and NOTEPAD User's Manuals thoroughly explain how to use these programs. The TELCOM and DIALER User's Manuals describe the use of the TELCOM and DIALER programs.

1.2.1 Signs, Symbols and Warnings


The following signs, symbols, warnings and word usage are used in this guide and other MultiSpeed manuals.

A> The MS-DOS prompt. After you log on to another drive, this will change to B>, C> and so on.

Type style When this type style is used in text, type the text exactly as you see it written. For example, "Type **FORMAT B:**".







The ENTER Key

Press the ENTER key when you see this. When you enter a command, you make a selection from a menu or type a letter, then press .



The Ctrl Key

The Ctrl (Control) key is never used alone. For example, when you see  , hold down  then press .


























Pay attention to the warnings under this heading. These warnings will show you how avoid damage to the equipment or loss of data.



Time-saving advice and tips that will help you work faster and more efficiently are included here.

1.2.2 Keypops In Text and Messages

In the text of this and other MultiSpeed manuals, the keytop is used in descriptions of procedures. However, in the MultiSpeed help messages, the keys are referred to by name. Glance over the list below and be sure you are familiar with each keytop and its proper name.

up arrow		NUM LOCK	
down arrow		DEL (Delete)	
left arrow		PrtSc (Print Screen)	
right arrow		HELP	
ENTER		POP UP	
END		TAB	
PgDn (Page Down)		SHIFT	
PgUp (Page Up)		ESC	
HOME		ALT	
INS (Insert)		BACKSPACE	
SCROLL LOCK		CAPS LOCK	
CTRL (Control)			

These are special symbols that you can type from the keyboard. Be sure you are familiar with these symbols and their proper names:

^	caret	< >	angle brackets
{ }	braces	\	backslash
[]	square brackets	/	slash

1.3 STANDARD FEATURES OF THE MULTISPEED

The MultiSpeed is yet another step in portable computers from NEC Home Electronics (U.S.A.), Inc. It operates on a sealed NiCd battery pack that automatically recharges when the AC Adapter is connected.

Though compact and portable, the MultiSpeed operates as a full performance MS-DOS operating system computer with dual 3.5-inch disk drives and 5K to 126K RAM disk. In addition to its own built-in applications software, MultiSpeed supports most of the major software for MS-DOS PCs.

The built-in applications programs are menu-driven on a wide LCD screen (80 columns x 25 lines). The built-in software can be used as "stand-alone" or "popped up" programs. The feature of "popping up" program allows you to interrupt your work session to use another built-in program without shutting down. For example, if you are using the FILER (the card filer) and you need to jot down a quick memo, all you have to do is start the NOTEPAD by using the POP UP key (pop NOTEPAD), write your note and return to the FILER. You don't have to exit FILER to use NOTEPAD.

With the MultiSpeed, help is never far away. Every time you select an option or command, the message area at the bottom of the screen always displays messages and prompts that will help you along. When you need more information, all you have to do is select the "Help" command or press to display the help window on the screen.

1.4 OPTIONAL FEATURES

Although the MultiSpeed delivers full performance on its own, its family of accessories allow it to perform as a normal desktop unit. Here's a list of the accessories available. Detailed descriptions of how they are installed and used follow in later sections of this manual:

The **MultiSpeed 300/1200 BPS Modem (PC-16-61)**, installed in the MultiSpeed, lets you take full advantage of the DIALER and TELCOM built-in applications programs.

The **External Transfer Cable Kit (PC-16-97)** enables you to connect the MultiSpeed to an IBM PC or IBM PC/XT so you can use the MultiSpeed disk drives as external drives.

The **RS-232C Cable (normal) (PC-16-95)** is for connecting the MultiSpeed to your own external modem.

The **RS-232C Cable (reverse) (PC-16-96)** is also available for serial data transfers.

The **Printer Cable (PC-16-94)** is used to connect the MultiSpeed to parallel printers.

The **MultiSpeed NiCd Battery Pack (PC-16-70)** provides power to the MultiSpeed for use as a portable computer.

The **MultiSpeed Car Battery Cable (PC-16-98)** enables you to connect the MultiSpeed to a car battery.

The **MultiSpeed Phone Cable (PC-8499A-04)** is for connecting a telephone to the optional Modem Board installed in the MultiSpeed.

CHAPTER 2 GETTING STARTED

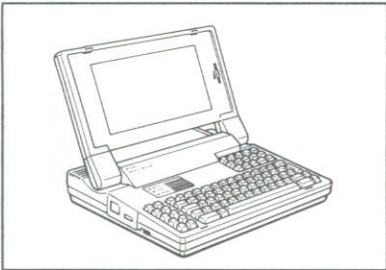
2.1 UNPACKING THE MULTISPEED	10
2.2 FAMILY OF COMPONENTS	13
2.3 OPTIONAL COMPONENTS	14
2.4 OPENING AND ADJUSTING THE LCD COVER	17
2.5 OPERATING CONDITIONS	19
2.6 A CLOSE INSPECTION OF THE MULTISPEED	20
2.6.1 Parts and Indicators (Front View)	20
2.6.2 Connectors and Switches (Rear and Side View)	21
2.6.3 The Keyboard	24
2.7 DISKETTE HANDLING AND CARE	29
2.7.1 Cautions	29
2.7.2 Write-protect Switch	30
2.7.3 Mounting and Removing Diskettes	31

2.1 UNPACKING THE MULTISPEED

Although the MultiSpeed is a full performance, portable computer, its flexible design and family of peripherals (hardware that you add on to the computer, a printer, for example), allow it to perform as a normal desk top unit. Save the original box in case you have to ship or transport the MultiSpeed.

Refer to the following diagrams, making sure that the box includes the following:

MultiSpeed Portable Computer



A portable battery operated computer, featuring an LCD (Liquid Crystal Display) 25 lines long and 80 characters wide.

Five built-in application programs and a SETUP utility program along with an MS-DOS system diskette (Version 3.2).

MS-DOS System Diskette



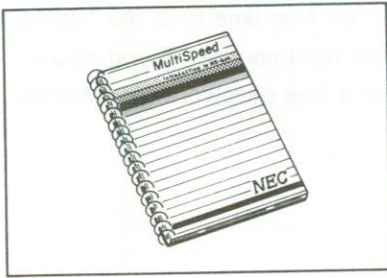
The MS-DOS system diskette (Version 3.2).

MultiSpeed User's Guide



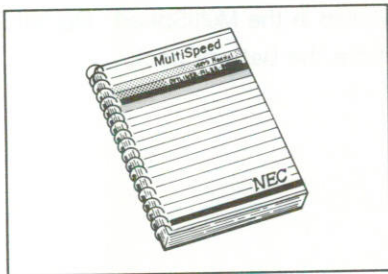
The User's Guide includes information on the first steps of using the MultiSpeed. This guide describes all procedures from turning the power supply on to operating the built-in software programs. A tutorial for each software package, setting up the working environment and instructions for connecting the optional peripheral devices are also included in this manual.

Introduction to MS-DOS



This manual introduces the user to the disk operating system. General information about MS-DOS and MS-DOS commands are included in this manual.

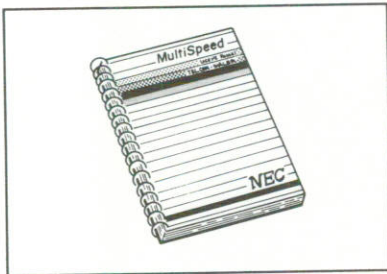
User's Manual for OUTLINER FILER, and NOTEPAD



This manual describes procedures for the three built-in software programs:

OUTLINER:	Outline processor
FILER:	Card management
NOTEPAD:	Word processor

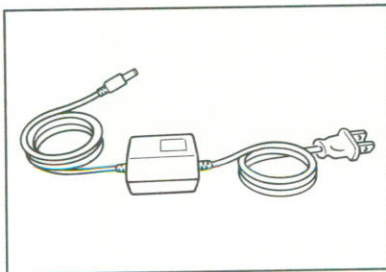
User's Manual for TELCOM and DIALER



In this manual are the command references for two more convenient built-in programs:

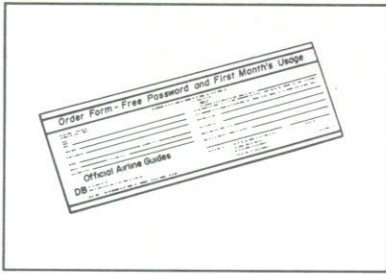
TELCOM:	Telecommunications
DIALER:	Auto dialing

MultiSpeed AC Adapter (PC-8671A-01)



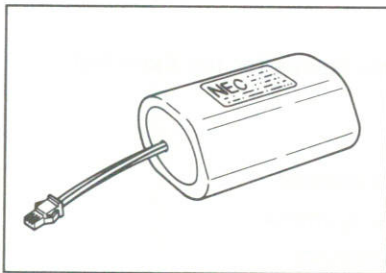
For use with the MultiSpeed Portable Computer. Saves NiCd Battery Pack. (Included in the MultiSpeed box.)

OAG Promotion Card



The OAG Card is an offer for free time from the Official Airlines Guide, an electronic data service. If you return this card, you have use of a free password for OAG EE.

MultiSpeed NiCd Battery Pack (PC-16-70)



The NiCd (Nickel Cadmium) Battery Pack is vacuum sealed and should be installed in the MultiSpeed. Do not remove the plastic seal from the battery pack.

2.2 FAMILY OF COMPONENTS

This is a complete list of the MultiSpeed family of components.

Product Name	Product No.
MultiSpeed (main unit)	
MultiSpeed 300/1200 BPS Modem*	PC-16-61
MultiSpeed NiCd Battery Pack**	PC-16-70
MultiSpeed Printer Cable*	PC-16-94
MultiSpeed RS-232C Cable (normal)*	PC-16-95
MultiSpeed RS-232C Cable (reverse)*	PC-16-96
MultiSpeed External Transfer Cable Kit*	PC-16-97
MultiSpeed Car Battery Cable*	PC-16-98
MultiSpeed AC Adapter	PC-8671A-01
MultiSpeed Phone Cable*	PC-8499A-04

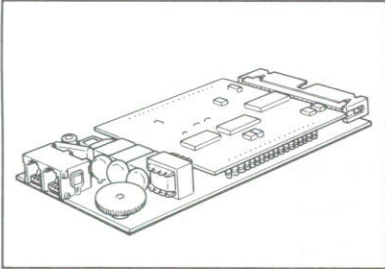
* indicates optional equipment

** included in the main unit and also available as an option

The next section describes optional components.

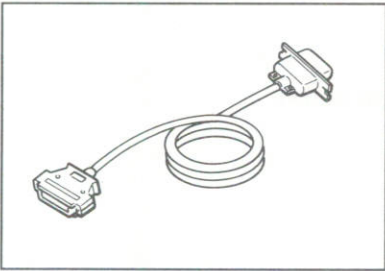
2.3 OPTIONAL COMPONENTS

MultiSpeed 300/1200 BPS Modem PC-16-61



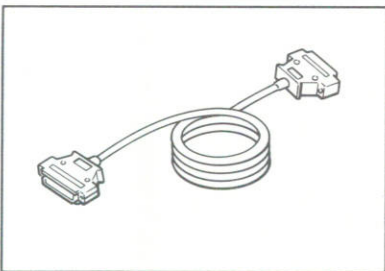
A modem board used for data communication and auto dialing.

MultiSpeed Printer Cable PC-16-94



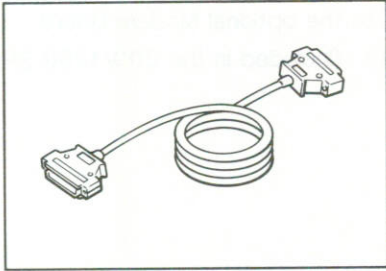
Centronics compatible parallel printer cable.

MultiSpeed RS-232C Cable (normal) PC-16-95



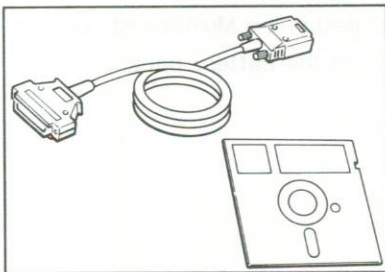
Normal (straight) RS-232C cable for data communications through an external modem.

MultiSpeed RS-232C Cable (reverse)
PC-16-96



Reverse RS-232C cable for direct computer to computer data communications. Not for use with a modem.

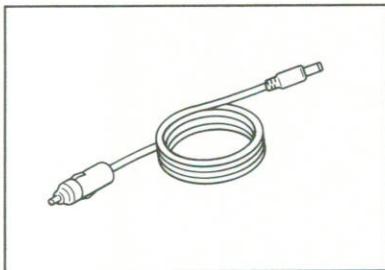
MultiSpeed External Transfer Cable Kit
PC-16-97



This kit enables you to use the MultiSpeed disk drives as external drives with an IBM PC or IBM PC/XT.

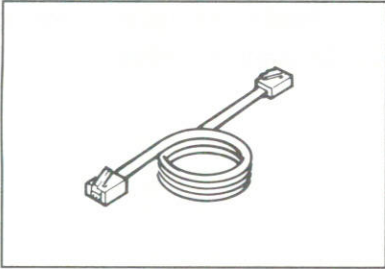
Includes a cable to connect the MultiSpeed to an IBM PC or IBM PC/XT, and a utility program to configure your PC for two external drives.

MultiSpeed Car Battery Cable
PC-16-98



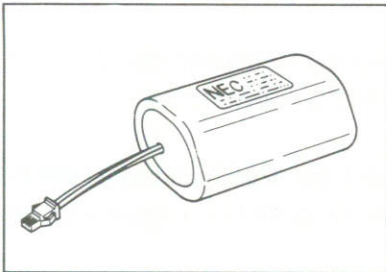
To connect the MultiSpeed to a car battery (adapter fits in the lighter socket). Charges the installed NiCd Battery Pack as you drive.

**MultiSpeed Phone Cable
PC-8499A-04**



To connect a telephone to the optional Modem Board installed in the MultiSpeed. (Included in the 300/1200 BPS Modem box.)

MultiSpeed NiCd Battery Pack (PC-16-70)

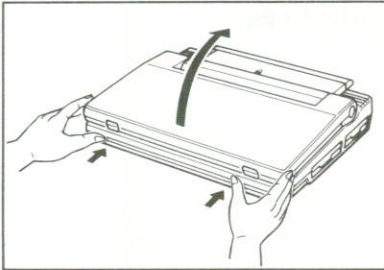


The NiCd (Nickel Cadmium) Battery Pack is vacuum sealed and should be installed in the MultiSpeed. Do not remove the plastic seal from the battery pack.

2.4 OPENING AND ADJUSTING THE LCD COVER

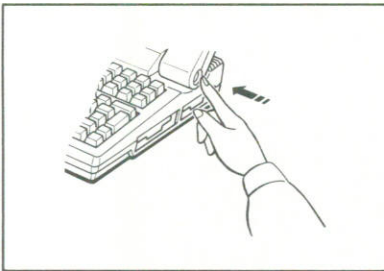
Be careful when you open and close the LCD (Liquid Crystal Display) cover of your MultiSpeed. When you are not using the MultiSpeed, keep the LCD cover down and securely locked.

Opening the LCD Cover



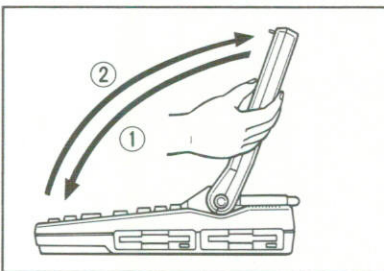
To open the MultiSpeed, push in the lock buttons on the top edge of the LCD cover.

LCD Cover Angle Setting



Move the LCD to a suitable viewing angle and press in the lock button.

Adjusting and Closing LCD Cover



To change the viewing angle of the screen, first move the LCD cover toward you as if to close it. This will release the lock.

Move the screen to a suitable angle and press in the lock button to lock the LCD cover in place.

To close the LCD cover, pull it toward you to release the lock. Close the cover over the keyboard and be sure it is securely locked before you move the MultiSpeed.



When you have positioned the LCD cover in place with the lock button, it cannot be moved backwards. If the LCD cover is forced backward without first pulling it forward to release it, you may damage the LCD hinge. Before you move the LCD cover back, always release the lock first by pulling it gently towards you.

Any damage resulting from improper use of the lock button is specifically excluded from warranties either expressed or implied by NEC Home Electronics (U.S.A.) Inc.

2.5 OPERATING CONDITIONS

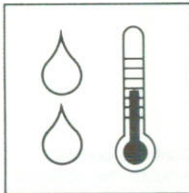
Read these instructions carefully before you use your MultiSpeed.



Use the system only within the following working ranges of temperature and humidity:

Work site temperature: 41^o to 95^oF (5^o to 35^oC)

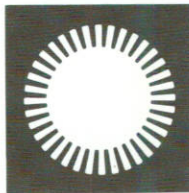
Work site humidity: 20% to 80%



Store the MultiSpeed in a location that falls within the following ranges of temperature and humidity:

Storage temperature: -4^o to 122^oF (-20^o to 60^oC)

Storage humidity: 10% to 90%



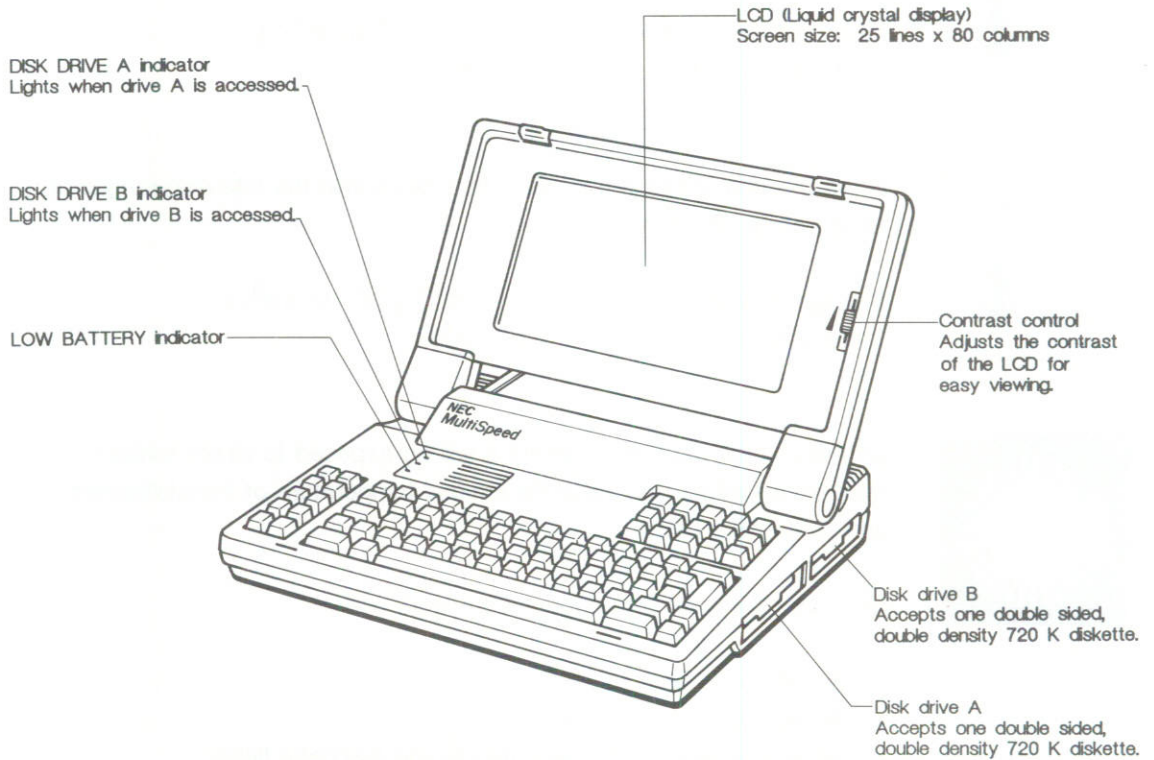
Do not use the MultiSpeed where it will be exposed to direct sunlight. Heat from sunlight may raise the internal temperature of the Multispeed and damage its parts.

Exercise care when you choose your work site:

- Avoid dusty air
- Avoid constant vibration
- Avoid machinery that generates strong magnetic fields

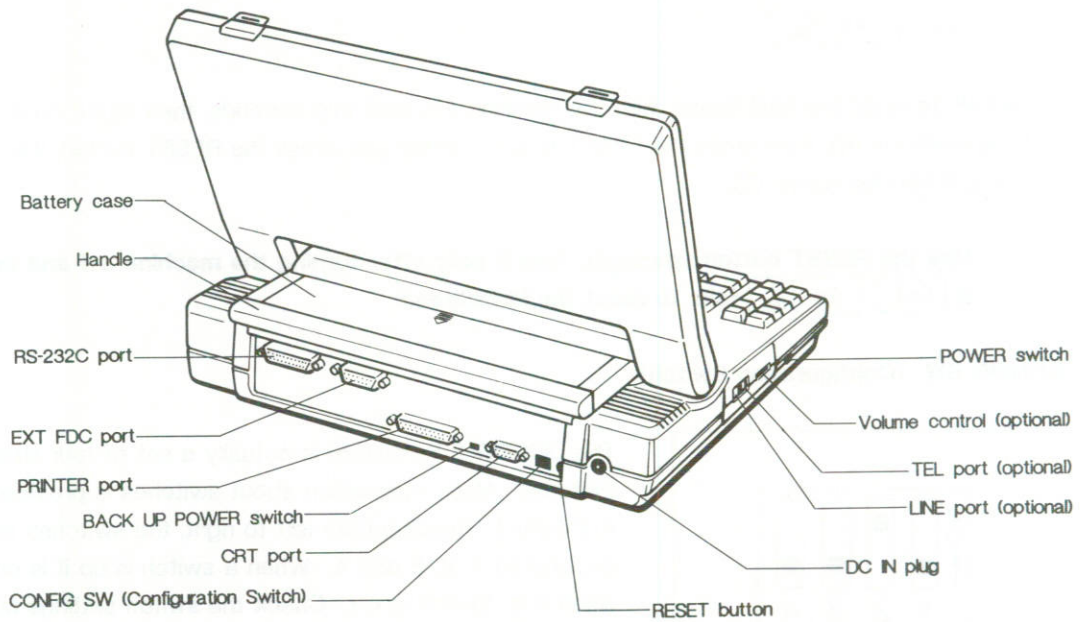
2.6 A CLOSE INSPECTION OF THE MULTISPEED

2.6.1 Parts and Indicators (Front View)



MultiSpeed (Front View)

2.6.2 Connectors and Switches (Rear and Side View)



MultiSpeed (Rear View)

POWER switch

Turns power on and off

DC IN plug

Connect the optional 13.5V MultiSpeed AC Adapter here if you wish to plug the MultiSpeed into a wall outlet.

RESET button

If the MultiSpeed hangs up, press these keys together to attempt a reset:

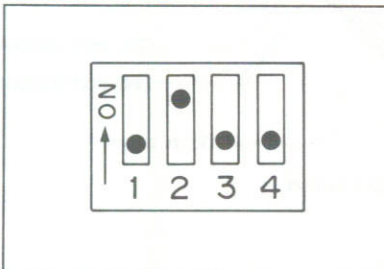


If this fails to reset the MultiSpeed, turn the machine off, wait five seconds, then turn it on again. If these methods fail, then press the RESET button. When you press the RESET button, this may clear the RAM disk (drive C:).



Use the RESET button sparingly. Use it only after turning the machine off and on or if    fails to reset the MultiSpeed.

CONFIG SW (Configuration Switch)



The CONFIG SW (switch) is actually a set of four small dip switches. More information about switches is provided in Appendix I. Reading from left to right, the switches are designated 1, 2, 3 and 4. When a switch is up it is on, when it is down it is off. Check the switch settings now to be sure that only the second switch is on (up). The others should be off (down).

CRT port

Connect the cable from your color monitor here if you want to use the MultiSpeed with a color monitor. When you use a monitor connected to the MultiSpeed, you have to make a simple setting with the SETUP program that temporarily disables the MultiSpeed's LCD. This procedure is described in Section 7.3. An IBM Color Display or NEC Multisync monitor can be connected to the MultiSpeed.

BACK UP POWER Switch

Turning this switch on activates the back-up battery. This switch must be turned on before the POWER switch on the left side of the MultiSpeed is turned on. The BACK UP POWER switch should also be at the ON position when you charge the back-up battery.

PRINTER port

Connect parallel printers to the MultiSpeed here with the MultiSpeed Printer Cable.

EXT FDC port

This is the interface connector used for the External Transfer Cable when the MultiSpeed built-in disk drive is used as an external disk drive for a host computer (IBM PC or IBM PC/XT).

RS-232C port

Use this port to connect an external modem with the RS-232C Cable (normal). You can also use this port for data transfer from another computer, but you must use the RS-232C Cable (reverse).

Battery Case

The NiCd Battery Pack is connected and installed in the battery case.

Volume control

Adjusts volume when monitoring carrier and dial tones as well as busy signals from the telephone line when the 300/1200 BPS Modem is installed.

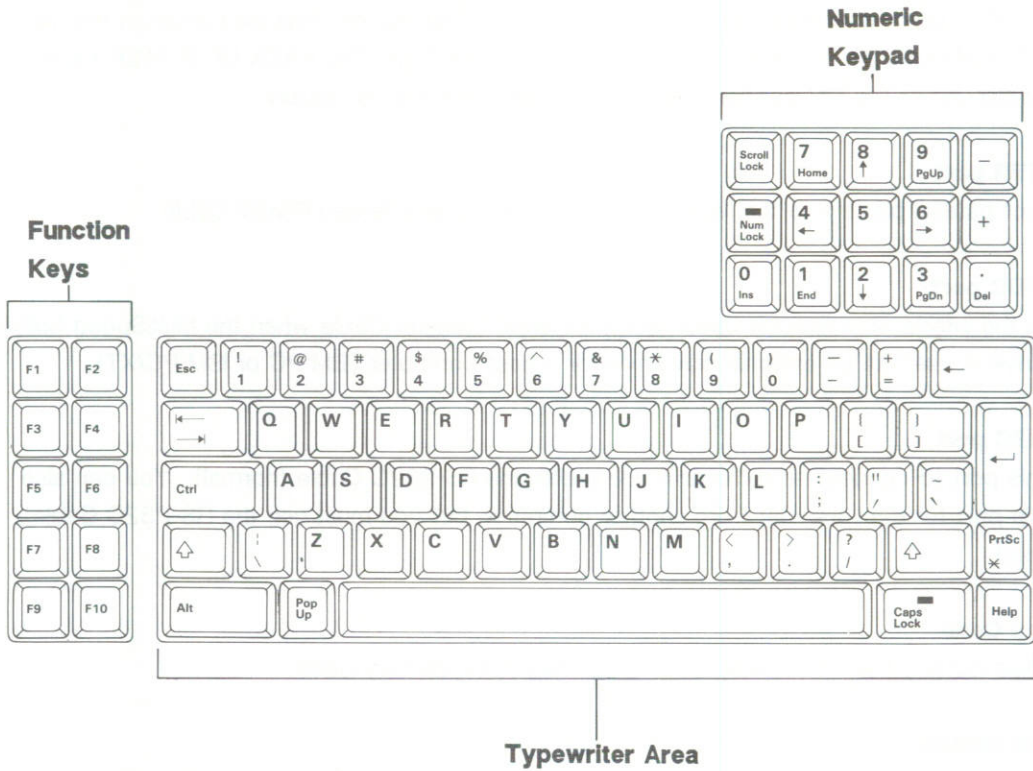
TEL port

Connects the MultiSpeed to the telephone with the MultiSpeed Phone cable when using the optional 300/1200 BPS Modem for data communications or auto dialing. The TEL and LINE connectors are covered by a plastic "knockout" if the 300/1200 BPS Modem is not installed in the MultiSpeed.

LINE port

Connect the cable from the telephone system to this connector when using the optional 300/1200 BPS Modem for data communications or auto dialing. The TEL and LINE connectors are covered by a plastic "knockout" if the 300/1200 BPS Modem is not installed in the MultiSpeed.

2.6.3 The Keyboard






Typewriter Area

Key positions in the typewriter area are much like those of a standard typewriter. Some additional keys, however, perform special functions.





CAPS LOCK

Press  once. The LED on the top of the key lights, and locks the characters A through Z in the uppercase position. To shift to lower-case characters while Caps Lock is on, . Press  again to release.





ENTER

The ENTER key is used to enter a command. First, you select a command or type the first character of the command name, then you press . The ENTER key is also used in the NOTEPAD to type hard returns that end a paragraph and insert an empty line in text. In MultiSpeed help messages,  is always called "ENTER" or "the ENTER key".




PrtSc (Print Screen)

Hold down  and press . A copy of what is on the screen will be printed. If the information on the screen is in alpha/numeric characters, as in a program listing, a duplicate of the information is printed. If the information is a graphic representation, it can be reproduced only on a printer that supports graphic printing, such as the IBM Graphics Printer.



BACKSPACE

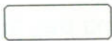
The BACKSPACE key moves the cursor one position to the left on your screen. The character to the left of the cursor is erased. The space bar and  can also be used to move the highlighted cursor in the command line of built-in MultiSpeed applications programs.



When entering data into your computer, remember the number zero (0) and the letter O are not interchangeable.



As with the zero and O, the number 1 and the lower-case letter L are not interchangeable.



Space bar

When pressed, the space bar moves the cursor to the right. This types a space or moves the next character to the right.





CTRL (Control)

The control key will perform a variety of functions. These are described in your operating system manual or application program manual.



ESC (Escape)

The functions of  are also described in your operating system or application program manual. In most programs, when you press , you can cancel (escape) the current operation.



TAB

The TAB key moves the cursor to the next tab stop to the right in the NOTEPAD. It can also be used in built-in MultiSpeed applications programs to move the highlighted cursor to the next field in the command line.



BACKTAB

The BACKTAB is used to move the highlighted cursor to the left in the command line of some programs.



Reset

Press these keys together if the MultiSpeed hangs up. (See page 22.)





SHIFT






The keyboard has two SHIFT keys, which are in the typewriter area. Pressing either of these changes the keys in the typewriter area to upper case. When alphabetic keys are pressed, the characters appear as capital letters. When other keys in the typewriter are pressed, the characters shown on the upper portion of the keys appear.



POP UP

You can run the built-in application programs very quickly by using the POP UP key. Simply press a specific key while holding down the POP UP key, from whatever program you are using. For users who are not too familiar with the MultiSpeed, pressing the POP UP key for two seconds displays the menu of the built-in application programs.

While you are using a built-in program activated from the POP UP key, holding down  and pressing  will suspend the POP UP program and allow you to return to the program that is running from the MS-DOS command line (if any). Otherwise, you will return to the MS-DOS command line.

For example, first run NOTEPAD from the MS-DOS command line, then run OUTLINER by pressing  . Hold down  and press . You will return to NOTEPAD and OUTLINER will be suspended in the background. When you quit NOTEPAD, you will return to the MS-DOS command line. Press  to return to OUTLINER.







HELP

When you press the HELP key, you will see an appropriate explanation of what you should do while using the built-in application program.



Alternate


The MultiSpeed Character Codes (shown in Appendix F of this manual) can be generated with keys in the numeric keypad and .

Press  once. While holding down , enter the character code in decimal format with keys in the numeric keypad. After each character code entry, release  and the character code will be displayed. However, character codes with the decimal value "0" to "31" and "127" cannot be generated.

The Numeric Keypad



NUM LOCK

Pressing the Numeric Lock key once lights the LED on the top of the key, and places 0 through 9 of the numeric keypad in the numeric state. When the keys 0 through 9 are pressed, numerals appear on the screen. Pressing  again returns the keys 0 through 9 to cursor-control keys.



SCROLL LOCK

Turns the scroll mode on. Scrolling moves the screen up, down, left and right so you can see parts of the text outside the current screen.




INS (Insert)

Turns the insert mode on and off. When insert mode is on, characters are inserted at the cursor position and text to the right of the cursor moves right one column. When insert is off, a character is typed at the cursor position and writes over existing characters.



DEL (Delete)

When you press , the character at the current cursor position is erased, and all the characters to the right of the cursor position move one column to the left.



When the Plus and Minus keys are pressed, a plus or minus sign appears on the screen.

Cursor Controls



Moves the cursor up one line.

Up Arrow



Moves the cursor down one line.

Down Arrow



Moves the cursor one character column to the right.

Right Arrow



Moves the cursor one character column to the left.

Left Arrow



Moves the cursor to line 1, column 1 of the current file on the screen.

HOME



Moves the cursor to the end of the file.

END



Moves the screen up to display the previous page.

PgUp (Page Up)




Moves the screen down to display the next page below.


PgDn (Page Down)

Function Keys



Function keys are assigned various commands, depending on what software program is running. As many as 20 different commands can be assigned to these keys. The first ten are accessed by pressing the appropriate key, and the second ten are accessed by holding down  then pressing the function key.

For example, in NOTEPAD press  to delete a line, then   to undelete the line.

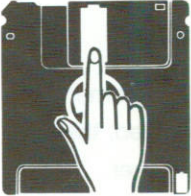
The use of function keys and what function is assigned to each key are described in the MultiSpeed manuals. You need not worry about having to memorize these keys; the function keys are listed with their command assignments on the screen when you press .

2.7 DISKETTE HANDLING AND CARE

Handle your diskettes carefully. A diskette has a service life of approximately one year with normal use.

2.7.1 Cautions

Avoid Touching Diskette Surface



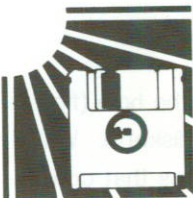
The diskette surface is protected by a moveable, metal cover. Never push the cover back and touch the surface of the diskette. Never attempt to clean the surface of the diskette with a cloth or solvents.

Avoid Magnetic Fields



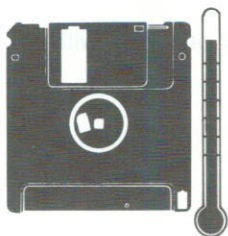
Never store diskettes near a magnetic field. Magnets can erase data from a diskette.

Avoid Direct Sunlight



Don't expose or store your diskettes in direct sunlight.

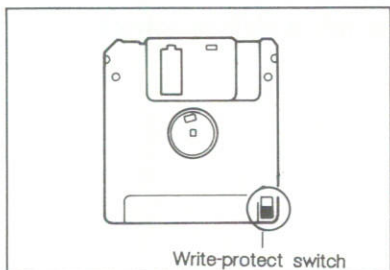
Temperature and Humidity



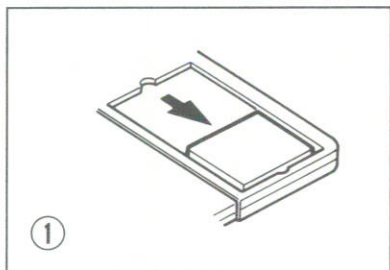
Temperature range for use and storage: 40° to 90°F (4° to 53°C)

Humidity range for use and storage: 20 to 80 %

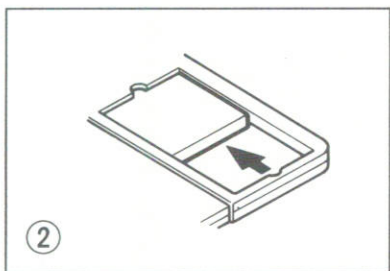
2.7.2 Write-protect Switch



Diskettes have a write-protect switch on one corner of the diskette. When a diskette is write-protected, the data on the diskette can be read but not written over. This can prevent you from accidentally erasing important data on the diskette.



To protect a diskette from accidental erasure, move the tab over to expose the hole. When the hole of the write-protect switch is open (figure 1), the diskette is write-protected. Data can be read from the diskette but cannot be written to the diskette.

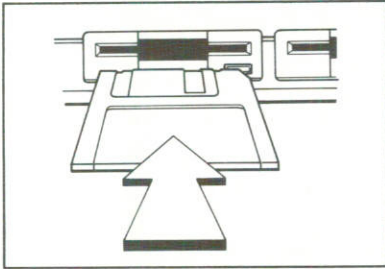


For normal operations, leave the tab over the hole (figure 2). This means you can save files to the diskette. Write-protect system diskettes and other diskettes that contain important files or programs that you do not want to write over.

2.7.3 Mounting and Removing Diskettes

Your MultiSpeed is a precision instrument, so insert and remove diskettes with care.

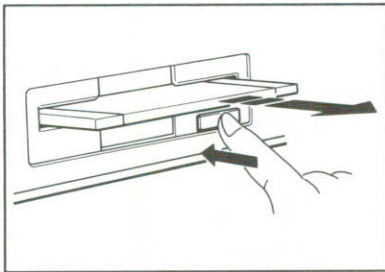
Inserting a Diskette



Hold the diskette label side up. Insert the metal edge of the diskette into the drive.

Gently push the disk into the disk drive until it locks in place. When the disk release button below the edge of the disk drive pops out, the diskette is mounted.

Removing a Diskette



To remove a diskette from a disk drive, press the release button below the disk drive opening.

When you press the release button, the diskette should spring partially out of the drive so you can remove it.

CHAPTER 3 CONNECTION PROCEDURES

3.1 POWER SOURCES	34
3.1.1 Rechargeable NiCd Battery Pack	34
3.1.2 The AC Adapter and Car Battery Cable	35
3.1.3 The Battery Indicator	37
3.2 BACK UP POWER Switch	38
3.3 CONFIG SWITCH SETTINGS	39

3.1 POWER SOURCES

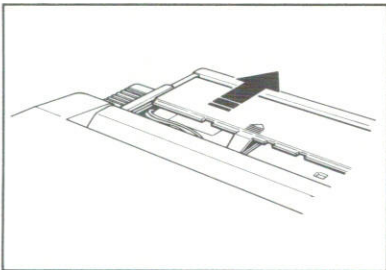
This section shows you how to install the rechargeable NiCd Battery Pack and how to connect the AC Adapter.

3.1.1 Rechargeable NiCd Battery Pack

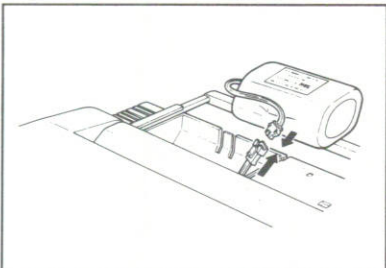
The NiCd Battery Pack is inserted into the battery case of the MultiSpeed. Before you install the battery pack, close the LCD and lock it in place.



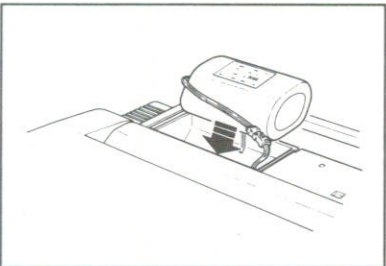
Do not break the plastic seal on the NiCd Battery Pack.



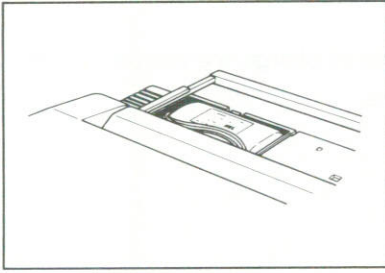
Pull out the MultiSpeed's handle, then remove the battery case cover. Follow the direction of the arrow on the battery case cover to remove.



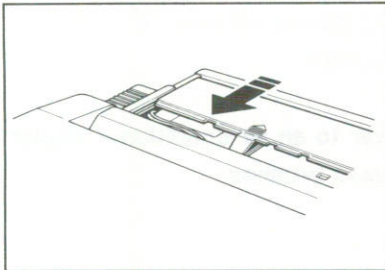
Inside the battery case there is a small receptacle on the end of a wire. Insert the battery pack's 3-pin plug into this receptacle.



First, put the receptacle inside the battery compartment, then place the battery pack inside the battery case. The label of the battery pack should be facing up.



Place the connected cable inside the battery case.



Replace the battery case cover and be sure that it is securely locked in place. Push in the MultiSpeed's handle.

The MultiSpeed will now run from the NiCd Battery Pack. When the AC Adapter is connected, the battery pack cuts off automatically and recharges itself from the AC Adapter.

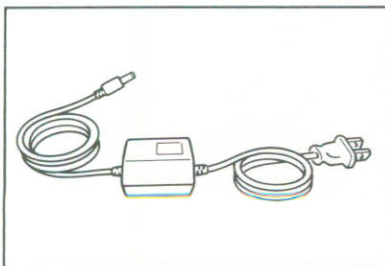


When you do not plan to use the MultiSpeed for more than a few months, remove the NiCd Battery Pack and switch off the BACK UP POWER switch located on the rear of the MultiSpeed.

3.1.2 The AC Adapter and Car Battery Cable

Use only the AC Adapter PC-8671A-01 or optional Car Battery Cable PC-16-98 to connect the MultiSpeed to an external power source.

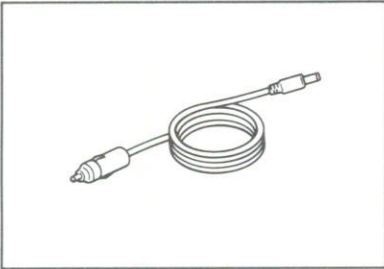
AC Adapter PC-8671A-01



Use the 13.5V AC Adapter to connect the MultiSpeed to a wall outlet.

Car Battery Cable

PC-16-98



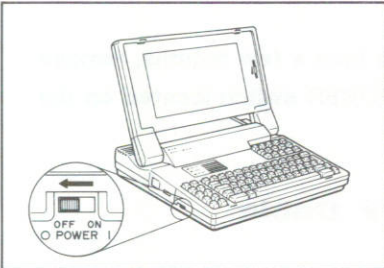
Use the Car Battery Cable to charge the installed NiCd Battery Pack as you drive.

When the AC Adapter or Car Battery Cable is connected, the MultiSpeed will operate from the AC Adapter or Car Battery Cable and recharge the NiCd Battery Pack.



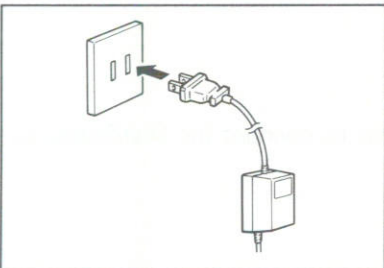
Do not use the AC Adapter on a circuit supplying power to an air conditioner, copier or any other large piece of electrical equipment that uses brushes.

Turn POWER Switch Off



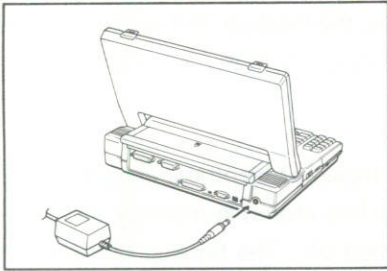
Before you connect the AC Adapter, make sure that the MultiSpeed POWER switch is off.

Plug in the AC Adapter



Plug the AC Adapter into an outlet.

Connect the AC Adapter

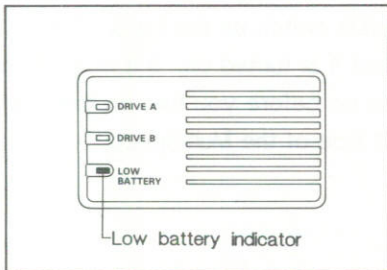


Plug the single jack end of the AC Adapter into the DC IN connector on the rear of the MultiSpeed.

3.1.3 The Battery Indicator

There are three LED (light-emitting diode) indicators on the keyboard of the MultiSpeed. The LED on the bottom is the LOW BATTERY indicator.

LOW BATTERY Indicator



The LOW BATTERY indicator comes on when the NiCd Battery Pack voltage is low. Please connect the AC Adapter or Car Battery Cable to the MultiSpeed to recharge the NiCd Battery Pack. (Time required for recharging is approximately eight hours.)

When the AC Adapter or car battery cable are not available, save the contents in memory on a diskette, then turn the power off.



When you use the Car Battery Cable to recharge the MultiSpeed, if the voltage of the car battery is not high enough, the NiCd Battery Pack installed in the MultiSpeed may not charge properly.

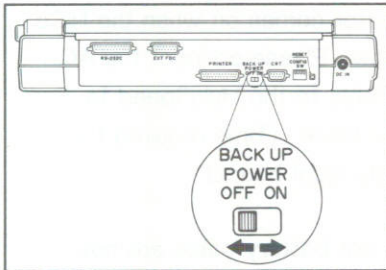
3.2 BACK UP POWER Switch

The BACK UP POWER switch on the rear of the MultiSpeed turns the backup battery on and off. This backup battery must be turned on before you turn the MultiSpeed's POWER switch on for the first time.

The backup battery is a small internal NiCd battery. It keeps a trickle of electrical current circulating through the MultiSpeed's memory circuits to preserve files stored in memory and to run the internal clock, even when the main POWER switch is turned off. The backup battery supplies a low charge to the memory circuits only when the POWER switch is turned off.

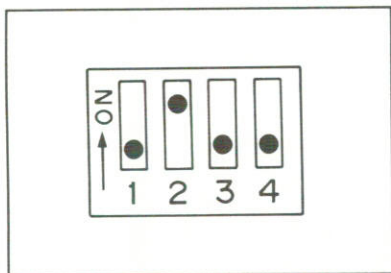
The backup battery is re-charged when either the AC Adapter is connected, or when the NiCd Battery Pack is installed. The backup battery switch should be turned off only if you intend to store the MultiSpeed or not use it for a long time.

BACK UP POWER Switch



Check the BACK UP POWER switch on the back of the MultiSpeed and confirm that it is turned on. If it is off, turn it on. This switch must be on before you turn on the main POWER switch on the left side of the MultiSpeed.

3.3 CONFIG SWITCH SETTINGS



Before you turn the MultiSpeed on, check the CONFIG SW (Configuration Switch) settings on the back of the MultiSpeed.

The switches are turned on and off by moving them up and down. Check the settings now to confirm that the number 2 switch is on (up) and the others are off (down).

If the second switch is off, the LCD will not display characters on the screen.

CHAPTER 4 BOOTING THE MultiSpeed

4.1 POWER ON AND OFF	42
4.1.1 Check List	42
4.1.2 Mount the MS-DOS System Diskette	42
4.1.3 Power On	43
4.1.4 Adjust LCD Brightness	44
4.1.5 Power Off	44
4.2 RESET	45

4.1 POWER ON AND OFF

When you "boot" the system, this means you have to insert the MS-DOS system diskette in drive A and turn the MultiSpeed on. To turn the MultiSpeed on for the first time (or after extended storage), follow this procedure.

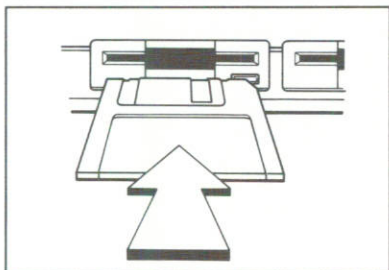
4.1.1 Check List

1. Make sure the NiCd Battery Pack is inserted properly or that AC Adapter is connected.
2. Check and be sure that the BACK UP POWER switch on the rear of the MultiSpeed is on.
3. Check the CONFIG SW settings on the rear of the MultiSpeed:
 - 1 DOWN (off)
 - 2 UP (on)
 - 3 DOWN (off)
 - 4 DOWN (off)
4. When using battery power only, recharge the NiCd Battery Pack for 8 hours before using it. However, when the AC Adapter is connected, the NiCd Battery Pack is automatically recharged and if desired, you may continue to run the system.
5. Peripheral devices such as a printer, for example, should be connected properly and turned off before you turn on the MultiSpeed.



Do not turn on peripheral devices until after the MultiSpeed is turned on.

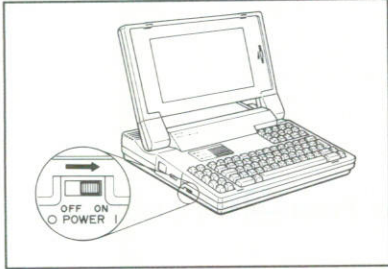
4.1.2 Mount the MS-DOS System Diskette



Insert the MS-DOS system diskette in drive A.

4.1.3 Power On

All peripheral connected to the MultiSpeed should be turned off before you turn the MultiSpeed on. Turn on peripheral devices after you turn the MultiSpeed power on.



Turn on the POWER switch on the left of the MultiSpeed.

Adjust the angle of the LCD so you can comfortably read the screen.

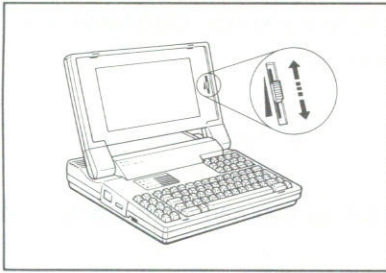
The hinge on the MultiSpeed lid can be damaged if the LCD screen is tilted back beyond the limit of the hinge.

If you have a printer or other peripheral devices connected to the MultiSpeed, turn them on now.


```
(copyright message)

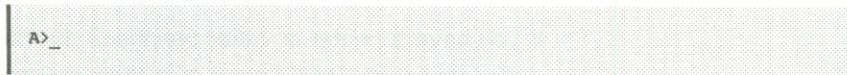
NEC MULTISPEED
RAM Test 607K
Installing RAM disk Driver
  Buffer size: 31 K
  Sector size: 512 Bytes/Sector
  Directory entries: 64
Formatting RAM disk .....
Installing built-in software
Current date is Tue. 1-01-1980
Enter new date (mm-dd-yy): _
```

4.1.4 Adjust LCD Brightness



Use the contrast control on the right side of the LCD screen so that the screen is displayed with the right amount of contrast and light for your viewing angle.

We'll show you how to set the date and time in the next chapter. Press  twice to display the MS-DOS prompt:



4.1.5 Power Off

The back-up battery maintains a constant supply of power to the MultiSpeed's internal RAM, thus preserving the contents of the memory even after the power supply is turned off.

Turn the POWER switch off. Then, after five seconds, turn it back on.



After you switch the POWER switch off, you should always wait at least five seconds before you turn it on again. If you experience difficulty with the machine, do not switch it off and on rapidly.



Never turn power off when you are running a program. Shut down the program before you turn power off. If you turn power off while you are editing a text in NOTEPAD, for example, you will lose the current version of your file.



If you are editing a file that you loaded from a diskette, don't remove that diskette from the drive until you have shut down the program or saved the file to diskette.

4.2 RESET

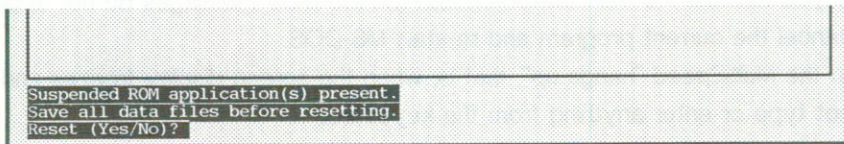
When you turn the MultiSpeed on with the MS-DOS system diskette in drive A, the system boots. If you have driver files to install, these are installed at this time. You can use the built-in applications programs only after the system has been properly booted with the MS-DOS system diskette in drive A.

When you turn the MultiSpeed on, this also resets the machine. Remember that there are two ways to reset the MultiSpeed:

1. Turn the MultiSpeed off, wait at least five seconds, then turn it on again.
2. Press these keys at the same time:

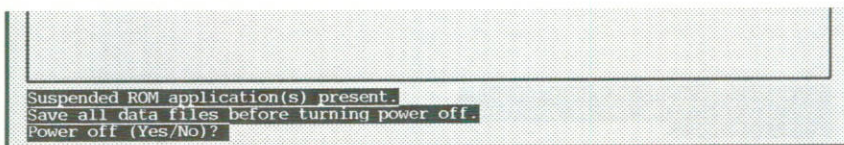
The second method is slightly faster than the first because the RAM test is not performed. When you turn the MultiSpeed on, if you want to skip the RAM test, just press the space bar.

If you press to reset the MultiSpeed when any activated or suspended pop programs exist, you will be asked to confirm your decision to shut down:



Press to execute the reset and abandon all your work, or press to return to the built-in programs so you can save your data to disk.

A similar message is displayed if you turn the MultiSpeed off while you are running or suspending a built-in program. This is a preventive feature to help you avoid losing work you have done during your current session.



If you want to return to the built-in programs to save your work, switch the POWER switch on again, press N, then proceed to store your data for each built-in program into a file. If you want to abandon all the data you have worked on, (it will not be recoverable) turn the power off by pressing Y.



Always follow recommended procedures for saving files and leaving the MultiSpeed built-in programs. Turn the MultiSpeed off only when the MS-DOS prompt is displayed on the screen.

If you have difficulty starting up the MultiSpeed, always check these switches and be sure they are on before you try to reset the machine:

BACK UP POWER (on the rear)

CONFIG SW (second switch from the left should be up, the others down)

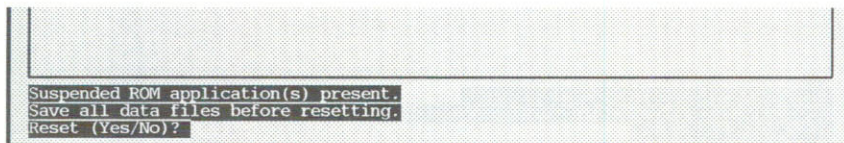
POWER (on the left side)

You should reset the MultiSpeed in the following situations:

- After you turn the POWER switch on and the MS-DOS messages do not appear.
- To cancel the current program and re-start MS-DOS.
- When the MultiSpeed "hangs up", that is, when the screen display freezes and you cannot type or enter anything from the keyboard.
- When you type or edit the CONFIG.SYS file on your system diskette to change the configuration of the system.




The MultiSpeed is automatically reset in the following circumstances:

- If you attempt to reset when there is a suspended built-in application program present and you press Y when you see this message:




- After you use the SETUP utility program to change work size reserved for built-in programs or change the size of the RAM disk.
- When you use RAM640R or COLD programs stored on the MS-DOS system diskette. Use of these files is explained in Appendix J.
- When power is on and you press the RESET button on the rear of the MultiSpeed.



The RESET button on the rear of the MultiSpeed should be used only after you have tried holding down    or turning the machine off and on and nothing happens. RESET acts immediately. You are given no warning messages. When you press the RESET button, memory will be cleared.



After the RESET button has been pressed to restart a "hung up" MultiSpeed, run the COLD program found on the MS-DOS system diskette. COLD initializes all of RAM, including the RAM disk. To execute the COLD program, simply type the word COLD at the MS-DOS prompt, and press . The system will fully initialize, reset and bring MS-DOS back up.

CHAPTER 5 MS-DOS

5.1 THE OPERATING SYSTEM	50
5.2 WRITE-PROTECT YOUR SYSTEM DISKETTE	51
5.3 STARTING UP MS-DOS	52
5.4 FORMATTING A DISKETTE	54
5.5 COPY YOUR SYSTEM DISKETTE	56

5.1 THE OPERATING SYSTEM

Your operating system is very important. If you can imagine a world championship Little League baseball game without an adult umpire, then you will have some idea of how your computer would work without an operating system.

Your operating system (MS-DOS Version 3.2) controls your computer. Without it, you would not be able to run programs. MS-DOS is a set of interrelated programs on the system diskette that you received with your MultiSpeed. These programs exercise management and control functions over processing. Generally, these functions include: storage management, processing management, displaying messages on the screen you can understand, keeping track of memory space and telling you when you make a mistake.

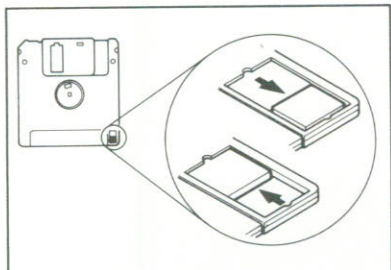
This section is limited to explaining the bare essentials about your operating system, namely, booting your system, setting the date and time, formatting data diskettes and copying program diskettes.

For more information about MS-DOS, read the Introduction to MS-DOS provided with your other MultiSpeed manuals. Introduction to MS-DOS is not, however, a complete MS-DOS manual. It is intended to introduce the most useful operating system functions that first-time users will need.

As MS-DOS is one of the most popular and widely used operating systems today, there are many excellent user guides available that will tell you more about how to use MS-DOS.

5.2 WRITE-PROTECT YOUR SYSTEM DISKETTE

Before you insert your system diskette in the computer, protect it from accidental erasure by setting the write-protect switch.



Turn the diskette over so you can see the write-protect switch. Move the write-protect switch tab so you can see the open hole.

You can now read files from the diskette (or copy from it), but you cannot write files to the diskette or delete them accidentally.

5.3 STARTING UP MS-DOS

1. If the MultiSpeed is on, turn it off.
2. Mount the MS-DOS system diskette in drive A.
3. Turn the MultiSpeed on.

After MS-DOS is loaded, you will see a message:

```
Current date is Tue 1-01-1980
Enter new date (mm-dd-yy): _
```

The underline to the right of the date prompt is called the cursor. The cursor shows you where the next character you type will appear.

4. Type in the date as three numbers. Use hyphens (-) or slashes (/) to separate the numbers:

month/day/year
month-day-year

Here are sample entries for September 30, 1986.

9-30-86
9/30/86
09/30/86

If you make a mistake and want to start again, press (the BACKSPACE key) to back over and delete characters.

5. When you are finished typing the date, press .

You only need to set the date once. The next time you boot the system, just press when the date prompt appears. MultiSpeed's internal calendar will keep the date current for you. Next, MS-DOS prompts you for the time.

```
Current time is 0:00:00.00
Enter new time: _
```

6. Type three numbers for the hour, minutes and seconds. You must use a 24-hour (military time) format. For example, 4 p.m. is 16. (If you typed a "4" for the first number, this would mean 4 a.m.)

You do not have to include the seconds. If you do include them, however, you can also type hundredths of seconds by following the seconds with a period and the number.

Here are some sample entries:

11:31:15 (15 seconds after 11:31 A.M.)
17:45 (45 minutes after 5 P.M.)
0:0:0.15 (a quarter of a second past midnight)

If you make a mistake and want to start again, press to back over and delete characters.

7. When you have finished typing the time, press

After the message, you will see the MS-DOS prompt:

```
A>_
```

When the date and time prompts appear, if you do not want to set the date, time or both, just press . When the MS-DOS prompt is displayed on the screen, you are ready to begin.

Now you're ready to run a program! But before you do, you will need to know how to shut down the system safely, and how to format diskettes.

5.4 FORMATTING A DISKETTE


Before you start using the MultiSpeed, you will need formatted diskettes so you can store files.

When you buy a new diskette, it won't be ready to use with the MultiSpeed until you format it. When you format a diskette, the operating system puts a series of electronic marks on the diskette so it knows where to put data on the diskette.

Formatting a diskette is similar to putting ruled lines on a blank piece of paper to indicate where you can write. Just as the lines guide your writing so you can keep your lines level on the paper, the format pattern written on the diskette shows MS-DOS where it can write data. If the sheet of paper is clean, there will be no lines or text written on the paper. However, if there are old lines and writing on the paper, you will have to erase the entire sheet before you draw new ruled lines.

When you format a diskette that already contains files, all information on that diskette is lost because the format operation will wipe it clean before setting the new format. When you use the FORMAT command, you must be careful not to use a diskette that contains information you want to keep.

If the MS-DOS prompt is already displayed, go to Step 3.

1. Mount the MS-DOS system diskette in drive A.
2. Turn the MultiSpeed on. Press  at the date and time prompts.



```
A>_
```

3. Now, to tell the operating system to format the diskette in drive B, type

FORMAT B:



```
A>FORMAT B:_
```

4. Press .

```
Insert new diskette for drive B:  
and strike ENTER when ready_
```

5. Mount a new diskette in drive B then press . When the formatting is complete, your screen should look like this:

```
Insert new diskette for drive B:  
and strike ENTER when ready  
  
Format complete  
  
730112 bytes total disk space  
730112 bytes available on disk  
  
Format another (Y/N)?_
```

6. If you want to format another diskette, press , press then repeat the procedure. When you are finished, press , then press .

5.5 COPY YOUR SYSTEM DISKETTE

In this section we'll show you how to back up (copy) your MS-DOS system diskette. You should always back up important master diskettes that contain programs or data files that you want to keep. You can put the original away in a safe place and use the copy as a work diskette for daily operations. If you lose, damage or accidentally erase the copy of your system diskette, the original diskette is safe and ready to be copied again.

The DISKCOPY command is a fast way to copy entire diskettes. It copies the whole diskette, erasing the previous contents of the target diskette. To issue the DISKCOPY command, just type:

DISKCOPY A: B:

DISKCOPY reads all the information from drive A: (the SOURCE diskette) and then writes it on drive B: (the TARGET diskette).



If the target diskette is unformatted (like a new diskette) or has a different format, DISKCOPY will reformat it for you.

1. Be sure the MS-DOS system diskette is in drive A:. The MS-DOS prompt should be displayed on the screen.

```
A>_
```

2. Now issue the DISKCOPY command. Type:

```
A>DISKCOPY A: B: _
```

3. Press .

```
A>DISKCOPY A: B:
Insert SOURCE diskette in drive A:
Insert TARGET diskette in drive B:
Press any key when ready . . .
```

- Your SOURCE diskette, your MS-DOS system diskette (the one you are going to copy) is already in drive A:, so just leave it there. Insert the TARGET diskette in drive B:. The TARGET diskette can be a new diskette or another diskette with a different format.



DISKCOPY will format (erase) the contents of the TARGET diskette if it contains data, so be sure it does not contain files you want to keep.

- After you mount the TARGET diskette in drive B:, press any key to continue. As the diskette in drive A: is copied, you should see this message:

```
Copying 80 tracks
9 Sectors/Track, 2 Side(s)
```

If your target diskette is not formatted or has a different format, you will see the next message while DISKCOPY is writing to the target diskette:

```
Formatting while copying
-
```

Copying will require about two minutes. When you see the next message, you have finished:

```
Copy another diskette (Y/N)?_
```

- Press to return to the MS-DOS prompt. Press if you want to make another copy of the system diskette.

CHAPTER 6 MULTISPEED PROGRAM TUTORIAL

6.1 INTRODUCTION	60
6.1.1 Help	60
6.1.1.1 The HELP Key	60
6.1.1.2 The HELP Window	61
6.1.1.3 The Help Command	61
6.1.1.4 The Help Line	61
6.1.2 Selecting a Command	62
6.1.3 Before You Begin	63
6.2 NOTEPAD	64
6.2.1 Edit Mode	64
6.2.2 Insert and Non-Insert Mode	65
6.2.3 Command Mode	65
6.2.4 Starting NOTEPAD	66
6.2.5 Inserting Text	68
6.2.6 Right Justify	69
6.2.7 Cut and Paste	69
6.2.8 Search	71
6.2.9 Save	73
6.3 FILER	75
6.3.1 Starting FILER	75
6.3.2 Command Selection	76
6.3.3 Designing a Format Card	76
6.3.4 Typing Data Cards	79
6.3.5 Saving the File	81
6.3.6 Quitting FILER	83
6.4 OUTLINER	84
6.4.1 Starting OUTLINER	85
6.4.2 Editing an Outline	85
6.4.3 Insert	86
6.4.4 Moving the Highlighted Cursor	88
6.4.5 Cut	88
6.4.6 Paste	89
6.4.7 Fold	90
6.4.8 Expand	91
6.4.9 Save	92
6.5 DIALER	93
6.5.1 Starting DIALER	93
6.5.2 Selecting a DIALER Command	93
6.5.3 Typing a Phone Directory	94
6.5.4 Moving the Highlighted Cursor	97
6.5.5 Deleting Lines from the Phone Directory	97
6.5.6 Changing Phone Directory Entries	98
6.5.7 Quitting DIALER	99
6.5.8 Backing Up DIALER.DAT	100
6.6 RUNNING THREE PROGRAMS AT ONCE	102

6.1 INTRODUCTION

This section of the manual includes brief tutorials on NOTEPAD, FILER, OUTLINER and DIALER.

Before you begin to work through the tutorial sessions which follow, there are several things you should be aware of.

6.1.1 Help

The MultiSpeed Help system is designed to give you the information and assistance you need to use any of the resident programs.

You can get Help from the system in three ways:

- By pressing on your keyboard
- By selecting the Help command for any program
- Via the short explanation of the current command or option on the Help line in the message area (the second line from the bottom of the screen).

The system is interactive because the help it provides depends on what you are doing when you ask for help.

6.1.1.1 The HELP Key

If you press when you first start to run a program, the MultiSpeed will display general help for that program.

Once you execute a command, the help you get will be specific to that command.

Some of the commands require you to select one of several options from that command. Once you do that, you can press again to get information specifically about the current option.

The interactive HELP system gives you help at every step of the program.

6.1.1.2 The HELP Window

When you press , the HELP window will be displayed. When the HELP window is displayed, program operations are suspended while you are reading the information in the HELP window.

In some cases, there is more help information available than can be displayed in the HELP window at one time. On the system lines you will see three options; the current option is highlighted. The options are:

- Next** Displays the next page of help information in the HELP window.
- Prev** Displays the previous page of information.
- Resume** Clears the HELP window from the screen and returns the operation of the MultiSpeed to the suspended program.

Press the space bar or to select the option you want and then press .

You can also select an option directly by pressing the key corresponding to the first letter of the option name. For example, press to display the Next page.

Instead of the Resume option, you can also press .

Once you get the information you want from the Help message, select "Resume" or press to clear the HELP window from the screen. The program will resume from the point where it was suspended.

6.1.1.3 The Help Command

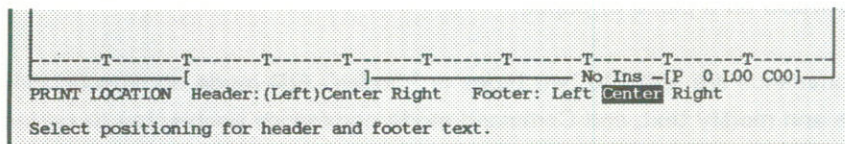
When you select the Help command from the program menu, you will see a brief explanation of the Help system, followed by a summary of commands, what they do and how to use them.

6.1.1.4 The Help Line

The Help line is the middle line in the message area at the bottom of your screen. This line of text provides a short explanation of the currently highlighted command or option.

To move the highlighted cursor to the "Footer" parameters, press

To select commands quickly, just press the key corresponding to the first letter of the command you want. For example, press to select "Center" and then to select "Left".



Use the space bar or to make the "Footer" selection you need. If you want to move left to the "Header" selections again, press .

When the selections for "Header" and "Footer" are completed, press to confirm the settings.

In the example above, pressing sets the "Header" to "Left" (the setting indicated by the parentheses) and the "Footer" to "Center" (the highlighted selection).

6.1.3 Before You Begin

Before you start to work through the tutorials which follow, you should have a formatted diskette in drive B of your MultiSpeed.

See Chapter 5 of this manual for information on formatting diskettes. You will only get the best from the tutorials if you work through them and duplicate the examples shown.

You do not have to work through the tutorials in any particular order, although you should leave the last, "Running three programs at once", until you have completed the others.

Remember, these tutorials are a brief introduction to the MultiSpeed resident programs; you should read the User's Manuals for each application program for more details.

6.2 NOTEPAD

NOTEPAD is a fully functional word processor as well as a "scratchpad" for your ideas and notes. This means that you can use it to format and print letters and documents, or to jot down notes as you would on a piece of paper.

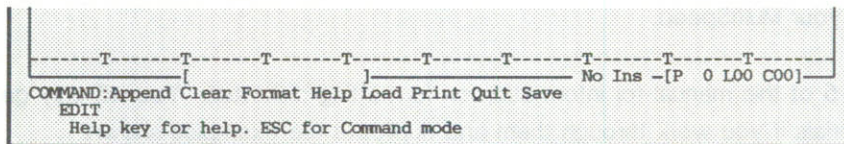
NOTEPAD commands are split into two types or "modes"; Edit mode commands allow you to enter, change and modify text, and Command mode commands enable you to perform various tasks on whole files.

A NOTEPAD "file" is a collection of text which you have saved and given a unique name. The amount of text can be one word or many pages. The unique name you give the collection of text is the "file name".

If you don't want to save text, you can just quit NOTEPAD; your "note" will be discarded.

6.2.1 Edit Mode

When you start NOTEPAD, you will always be in Edit mode. If you look at the bottom of the screen, you will see the word "EDIT":



The cursor (the flashing square which indicates your position in the text) will be in the top left hand corner of the screen.

You can swap between Edit mode and Command mode by pressing Esc.

In Edit mode, you can write, change and modify the document displayed on the screen. You can use various key combinations to move the cursor around in your document. These cursor movement keys are described in the NOTEPAD User's Manual.

You can also use twenty very powerful commands which are assigned to the function keys (the keys marked F1 through F10 on the left of your keyboard).

6.2.2 Insert and Non-Insert Mode

Edit mode has two separate modes of its own: Insert mode and Non-Insert mode. These two modes are in fact simply different ways of entering text.

Insert mode, as the name implies, allows you to insert text at the cursor position without overwriting existing text. The existing text is simply shifted to the right to make room for the inserted text. You will find that you use Insert mode for most of your work. Non-Insert mode allows you to overwrite existing text with new text. NOTEPAD will be in Non-Insert mode when you first invoke it.

Switch between Insert and Non-Insert mode by pressing  on the keypad.



6.2.3 Command Mode

To switch to Command mode from Edit mode, press . The first command on the Command line (Append) will be highlighted:

```

-----T-----T-----T-----T-----T-----T-----T-----T-----T-----
COMMAND:Append Clear Format Help Load Print Quit Save
Append another document at the end of current document.
Select command by moving cursor with the space bar. Press ENTER.

```

You can move the highlighted cursor along the Command line by pressing the space bar or . When the command you want to use is highlighted, press .

In Command mode, you can use commands which handle a whole file:

- **Append** a file to the end of your current file
- **Clear** your current file from the screen
- **Format** your current file
- Get **Help** with Command mode commands, editing commands, the keyboard, or making selections
- **Load** a file and display it on the screen
- **Print** a file
- **Quit** NOTEPAD
- **Save** a file after creating or modifying it

Refer to the NOTEPAD User's Manual for more information on these commands.

6.2.4 Starting NOTEPAD

Like all the other MultiSpeed built-in programs, you can start NOTEPAD from the POP UP key (as a pop program) or from the MS-DOS prompt (as a stand-alone program).

Both methods of starting NOTEPAD are explained fully in the NOTEPAD User's Manual.

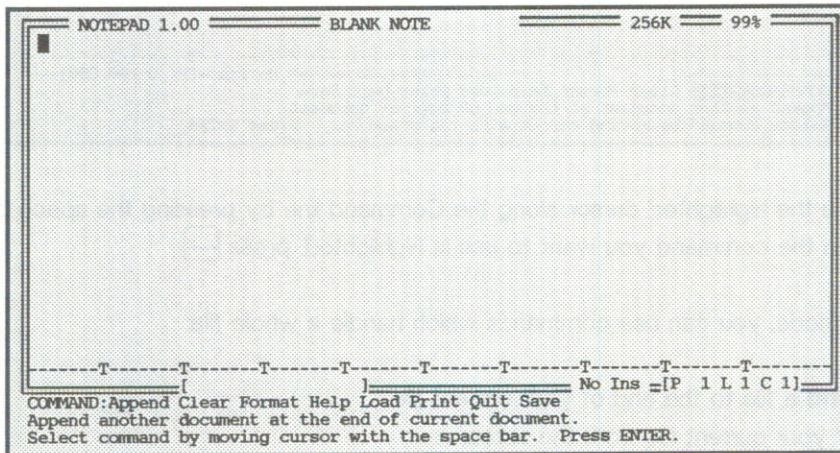
When you start NOTEPAD from the MS-DOS command level (in other words, from the A> prompt) it is known as a "stand-alone" program.

We'll start NOTEPAD as a stand-alone program first.

Type NOTEPAD at the A> prompt and press :


A>notepad_ or A>NOTEPAD_


You will see a blank screen:



As we said before, you are in Editing mode when you start NOTEPAD. This means that you can begin to type text immediately.

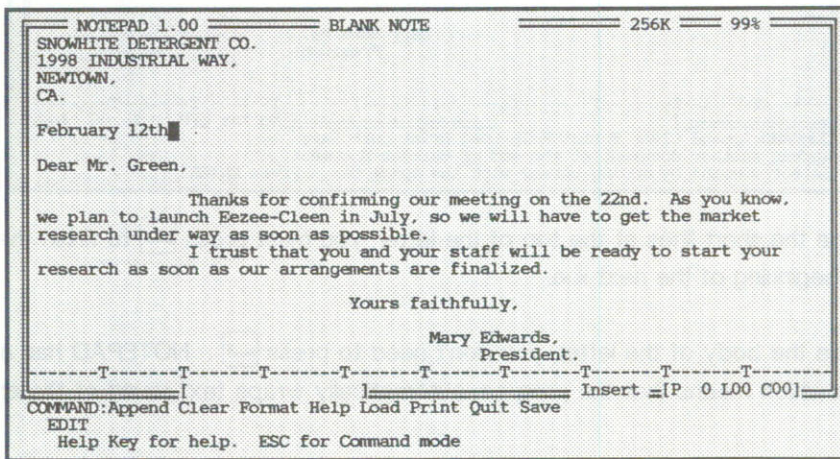
6.2.5 Inserting Text

Now we'll insert a line of text into the letter. First, make sure that NOTEPAD is in Insert mode. If it says "No Ins" at the bottom right of the screen, press . "No Ins" will be replaced by "Insert".

Move the cursor to the end of the last line of the address and press  twice. Then type

February 12th

The screen will look like this:



```
NOTEPAD 1.00 BLANK NOTE 256K 99%
SNOWWHITE DETERGENT CO.
1998 INDUSTRIAL WAY.
NEWTOWN,
CA.

February 12th
Dear Mr. Green,

      Thanks for confirming our meeting on the 22nd. As you know,
we plan to launch Eeze-Cleen in July, so we will have to get the market
research under way as soon as possible.
      I trust that you and your staff will be ready to start your
research as soon as our arrangements are finalized.

      Yours faithfully,

                        Mary Edwards,
                        President.

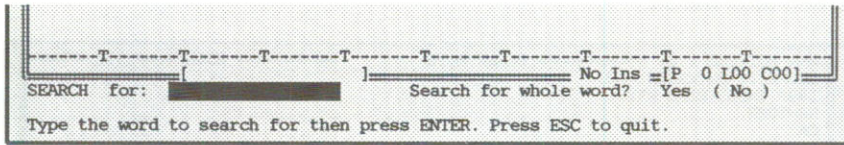
COMMAND: Append Clear Format Help Load Print Quit Save
EDIT
Help Key for help. ESC for Command mode
```

The date looks rather odd in this position, so we'll right justify it.

One point to remember about the Search command is that NOTEPAD only searches from the current cursor position onward. If the cursor is at the end of the document, NOTEPAD won't find anything!

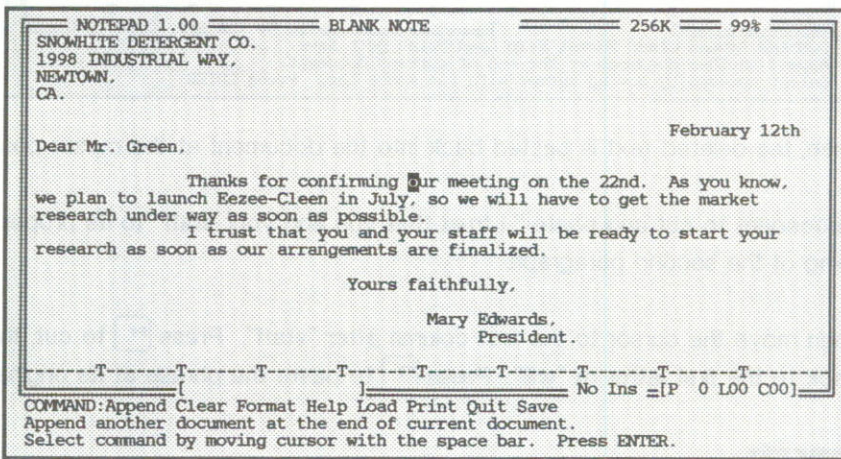
We'll search for the word "our" without specifying "whole word".

Press to move the cursor to the top of the screen and press . You'll see this prompt:



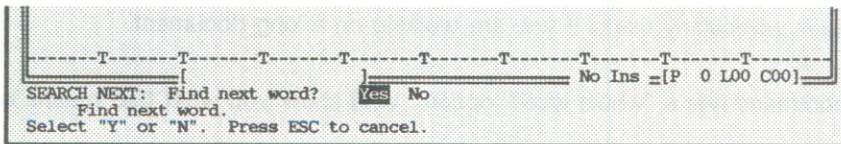
Type the word "our" and press . The highlighted cursor will move to the "Yes (No)" option. Select "Yes" or "No" by pressing the space bar. In this exercise, select "No" and press .

NOTEPAD will put the cursor on the first letter of the word:



This is the first instance of the word "our".

NOTEPAD will then prompt you again:



Since the highlighted cursor is already on "Yes", press .

NOTEPAD will find the next instance of the word "our":

```

NOTEPAD 1.00          BLANK NOTE          256K    99%
SNOWHITE DETERGENT CO.
1998 INDUSTRIAL WAY,
NEWTOWN,
CA.

                                                    February 12th

Dear Mr. Green.

      Thanks for confirming our meeting on the 22nd. As you know,
we plan to launch Eezee-Cleen in July, so we will have to get the market
research under way as soon as possible.
      I trust that you and your staff will be ready to start your
research as soon as our arrangements are finalized.

                Yours faithfully.

                        Mary Edwards,
                        President.

-----T-----T-----T-----T-----T-----T-----T-----T-----T-----
[ ]=====]=====]=====]=====]=====]=====]=====]=====]=====]=====]
COMMAND:Append Clear Format Help Load Print Quit Save
Append another document at the end of current document.
Select command by moving cursor with the space bar. Press ENTER.

```

Since we didn't specify that we wanted the "whole word" option, NOTEPAD has found "our" in the word "your".

Press to cancel the Search command and return to Edit mode.

6.2.9 Save

If you want to keep a NOTEPAD file so that you can work on it again, you must save the file.

See the NOTEPAD User's Manual for a detailed explanation of saving files and file name rules.

To save this file, first press to leave Edit mode and enter Command mode.

Then move the highlighted cursor to the word "Save" and press .

You will see this prompt:

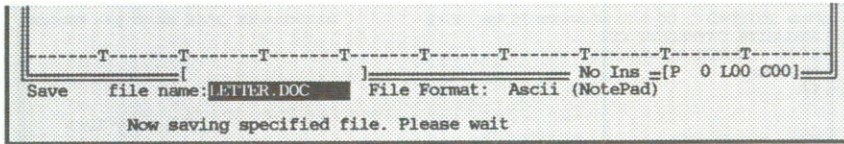
```

-----T-----T-----T-----T-----T-----T-----T-----T-----T-----
Save  File name: [ ] File Format: Ascii (Notepad)
Set parameters, then press ENTER. ESC to quit.

```

Type **LETTER.DOC** and press .

You will see a new message:



NOTEPAD will save this file with the file name LETTER.DOC.

6.3 FILER

With the FILER program you create a file that is divided up into a series of identical data cards. You can type information on the cards that can then be stored on disk. This file is a database that you design. You can retrieve cards, modify them to keep them current, delete cards that are no longer needed and add new cards.

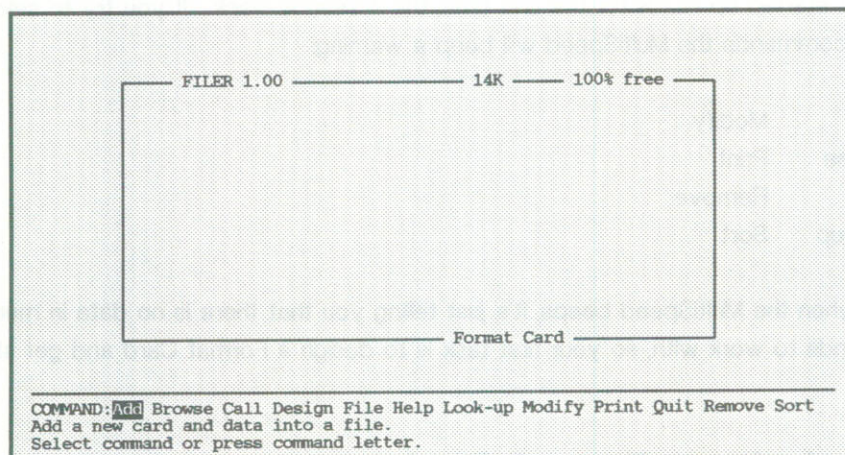
This is only a brief introduction to FILER. It will show you everything you need to know about starting, designing your own card, entering data into the cards and saving them to a file on disk. You may want to build your own sample database (10 cards or so should be sufficient) and then use it to experiment with all the commands explained in the FILER User's Manual.



Be sure you have a formatted disk in drive B before you begin. If you need more information about how to format a disk, refer to Section 5.4 of this guide.

6.3.1 Starting FILER

To start FILER, as a pop program, hold down then press . This will display the FILER screen:



6.3.2 Command Selection

You'll see the first command in the menu highlighted. Press the space bar to move the highlighted cursor to the right in the command line. Press to move it back to the left.



Movement of the highlighted cursor in the command line is rotational. If you press the space bar when the highlighted cursor is on the last selection it will rotate to the first selection. Similarly, if you press when the space bar is on the first selection it will rotate to the last selection.

Remember that in FILER, as well as other built-in MultiSpeed programs, you can start commands in two ways:

- Press the space bar to move the highlighted cursor to the command you want to use then press .
- Type the first letter of the command. For example, press to select the File command.

FILER commands are disabled until you create a Format Card for entry, or until you load a file. Since you just started up FILER for the first time, the screen is blank. If you try to select one of the following commands the MultiSpeed will beep a warning:

Add	Modify
Browse	Print
Call	Remove
Look-up	Sort

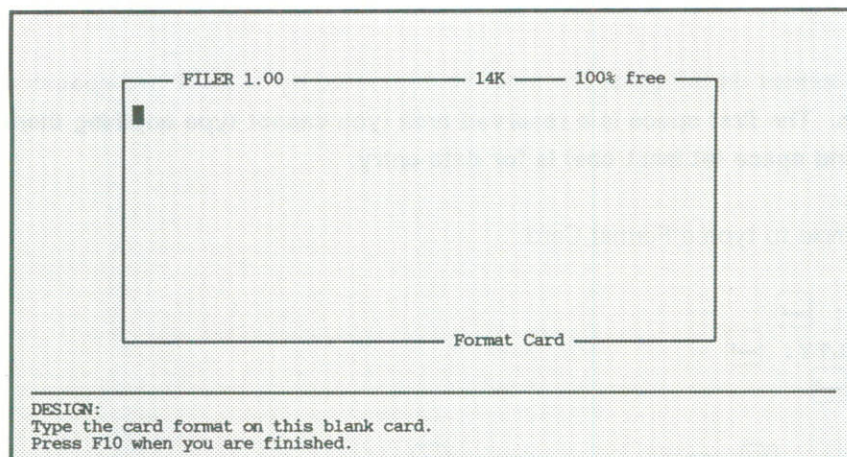
In this case, when the MultiSpeed beeps, it's just telling you that there is no data in memory for these commands to work with, so your first task is to design a Format Card and get started adding data.

6.3.3 Designing a Format Card





```
COMMAND: Add Browse Call Design File Help Look-up Modify Print Quit Remove Sort
Add a new card and data into a file.
Select command or press command letter.
```

Use the Design command to type your Format Card. This is the first thing you do every time you create a new file for FILER.

Press the space bar or  to move the highlighted cursor to "Design" then press .




The cursor is displayed in the upper left corner of the empty Format Card. Use one of the arrow keys to move the cursor around the window.

-  Moves the cursor down
-  Moves the cursor right
-  Moves the cursor left
-  Moves the cursor up

Now you are ready to type the field name. The field name is the heading or title that you give a line (or portion of a line). The name you type will serve as a reminder of what should be typed there.

Field names must be typed in a special way. This is the procedure:

1. Move the cursor to where you want to type the field name. (You can also press  to move the cursor down the left margin of the FILER window.)
2. Type the field name. You can use upper or lower case.

AGENCY

3. Type a colon after the last letter of the field name.



4. Now press  or one of the arrow keys to move the cursor to where you want to type the next field name.




Remember: If you fail to type the colon (:) after the field name, FILER won't accept your Format Card. It will beep and display the message "Invalid Format".





Field names on the same line must be separated by at least two spaces after the colon. The first space is a reserved area (you cannot type anything there), and the second space (at least one) is for data entry.

Use this example to type a Format Card.

AGENCY: 
SPECIALTY: 
AREA: 

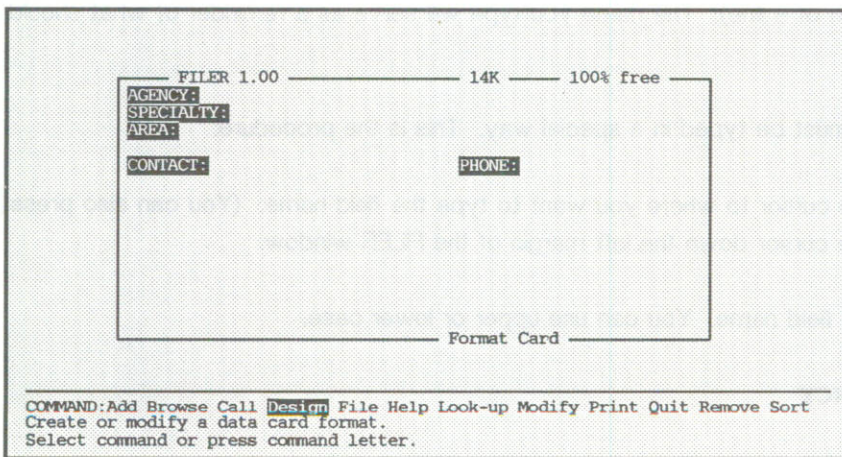
CONTACT:  (20 times) PHONE: 

If you make a mistake, use these keys to correct your errors:

 Delete character at the cursor position
 Cursor left delete

Press any key to insert a character at the cursor position.

When you are finished, press . Your screen should look like the one below:



6.3.4 Typing Data Cards

Use the Add command to type data cards. Press the space bar to move the highlighted cursor to "Add" then press . The cursor will appear in the first column of the first field.

FILER 1.00 ——— 14K ——— 100% free

AGENCY: █
 SPECIALTY: █
 AREA: █
 CONTACT: █ PHONE: █

Format Card

ADD:
 Enter new data on this new card.
 F1 to add another card. F10 to exit.

Type the entry for the first field. Press to move the cursor to the first column of the next field. Type your first card like the one below. After you type **DAVID JONES**, press to move the cursor to the "PHONE" field.

AGENCY: SMITH & SMITH
SPECIALTY: HOMES, GARDENS
AREA: CALIFORNIA

CONTACT: DAVID JONES

PHONE: 876-2417

It's not necessary to press after typing the phone number.

Press so you can insert another card. (The Prompt line at the bottom of the message area helps you here: "F1 to add another card.") Another blank card will be displayed on the screen.

Type the next card, then press **F1**.

AGENCY: FREEMAN WALLIS
SPECIALTY: CLEANING PRODUCTS
AREA: CALIFORNIA, NEVADA

CONTACT: CHARLES E. HUGHES

PHONE: 821-7434

Type the next card.

AGENCY: THE HARDY AGENCY
SPECIALTY: HOME, GARDENS
AREA: SOUTHERN CALIFORNIA

CONTACT: MONICA DELANEY

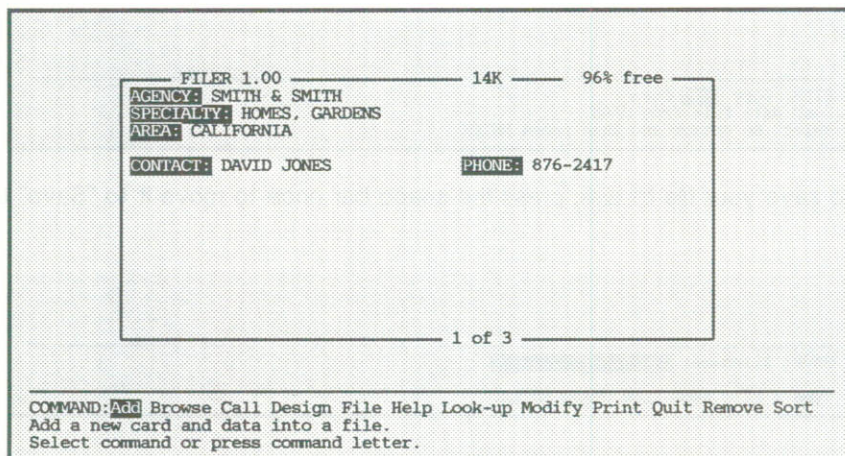
PHONE: 931-7660

Press **F10** to end.





ADD: **Exit** Next
Do you want to exit to the FILER command menu?
Select an option then press ENTER.

Press **←** to exit and display the FILER command line. The data card will go blank and you will see "FORMAT CARD" on the lower right border line.

Display the first data card in the file. Press .



Here and throughout the FILER User's Manual, the card displayed on the screen is called the "current card". Use these arrow keys to change the current card:

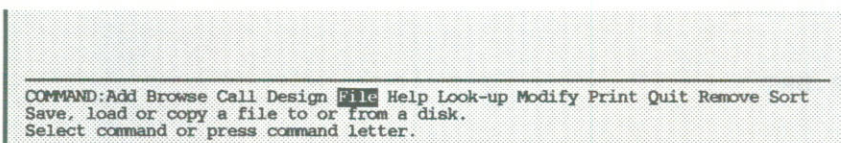
-  Display the next card
-  Display the previous card
-  Display the first card in the file
-  Display the last card in the file

You've just created your first FILER data card file. Now you're ready to save your file.

6.3.5 Saving the File


Your file is now in memory. If you quit FILER with the Quit command or turn the machine off, you will lose your file. It's very important that you remember to SAVE your file with the File command before you quit FILER.

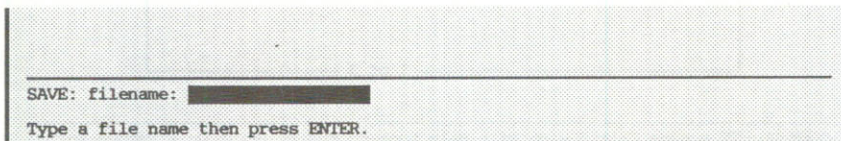
Press the space bar to move the highlighted cursor to "File" then press , or you can just press  to select the File command.



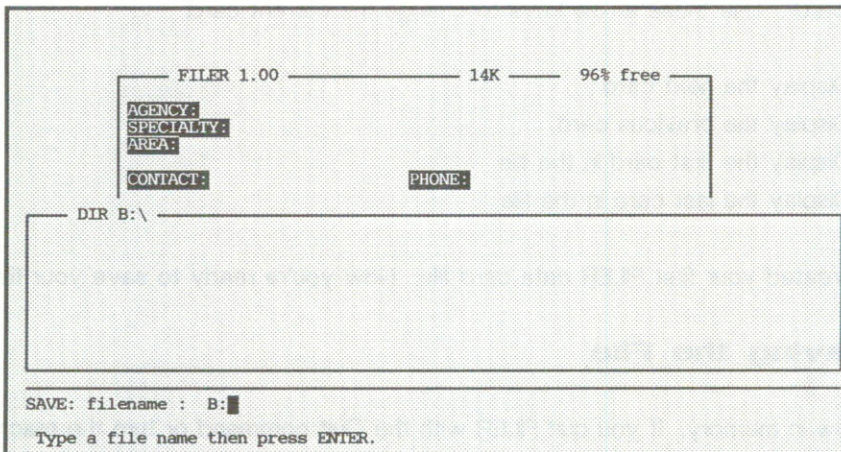
This is the next screen that will be displayed:



If you want to save your file to disk, press the space bar once to move it to "Save" then press  .



Type **B**: then press one of the arrow keys (it doesn't matter which one you press). Your screen will change to display the file directory for the diskette in drive B:



If you are using a new formatted diskette in drive B, you won't see any file names displayed there and the directory window will be cleared from the screen. Press any key to continue.

Now type the file name:

B:FILER.DAT

The .DAT file extension is optional, but it's a good idea to use file extensions because they can help you manage a large number of files later on. For more information about file extensions, refer to the Introduction to MS-DOS manual provided with the purchase of your MultiSpeed.

Before you press , your file specifier should look like this:

B:FILER.DAT

If you've made a mistake, press to move the cursor left and delete the incorrect characters, then re-type the file specifier.

Press . Your file will be saved to the diskette in drive B:, and FILER will return to the command line.

6.3.6 Quitting FILER

Use the Quit command to end your session with FILER.

Press the space bar to move the highlighted cursor to "Quit" then press , or just press .

```

COMMAND:Add Browse Call Design File Help Look-up Modify Print Quit Remove Sort
Quit FILER without saving the current file card.
Select command or press command letter.

```

```

QUIT: Yes No
Exits the FILER without saving.
Select an option then press ENTER

```

After you start the Quit command, FILER will remind you with a message that the Quit command does not save your file. This is important to remember, especially after you start creating (or loading) your own files to add or modify cards.



Use the File command's Save option to save your file before you quit FILER, especially after you have made changes in the data cards that you don't want to lose.

You've already saved your current file to the diskette in drive B:, so it's safe to quit now. Press or to quit the FILER program.

Later, if you would like to see the FILER data file again, start the FILER program then load the file with the File command Load option. Instructions about loading files are covered in the FILER User's Manual under the File command section.

6.4 OUTLINER

The OUTLINER program is a tool to help you develop a structured outline for reports, research papers, plans and many other kinds of project.

An outline is a summary of all the ideas, topics, and sections you want to incorporate into your project, whatever it may be.

The outline can be arranged to reflect your thinking about how important each topic is, and how various topics relate to each other.

The OUTLINER program lets you perform this task quickly and effectively.

Every outline produced with the OUTLINER program consists of one or more "headings" (lines of text) which represent the topics and sections to be included in the final document.

Each heading is ranked to reflect its importance in the outline and its relationship with other headings.

Like NOTEPAD, FILER and the other MultiSpeed programs, OUTLINER can be started from the POP UP key. This means that you can call it up at any time. You might want to refer to an outline or make a new addition to the outline while another application program is running.

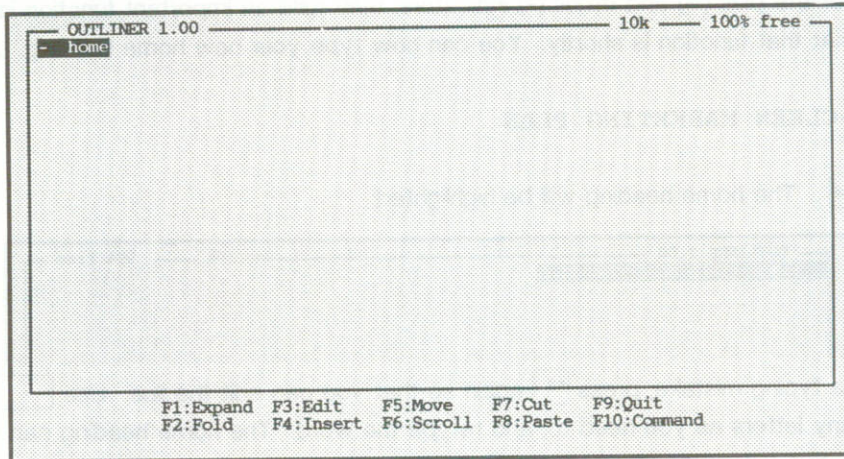
When you use OUTLINER from the POP UP key, the system will suspend the operating program until you exit OUTLINER.

You can also start OUTLINER as a stand-alone program from the MS-DOS prompt (>).

In this short tutorial, we'll show you how to create and edit a simple OUTLINER file. The commands we will use are more fully described in the OUTLINER User's Manual; this is just an introduction.

6.4.1 Starting OUTLINER

The first thing you must do, of course, is to start OUTLINER. To start it, as a pop program, just press **Pop** **U**. You will see a blank OUTLINER window.



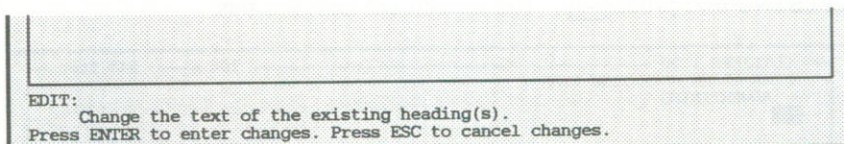
You will be in View mode.

6.4.2 Editing an Outline

The word at the top of the screen (**-home**) is the home heading, or top of the outline. We want to give our outline a new home heading. The first thing we must do is to delete the word "home", then type a new home heading.

The example we're going to use is based on a marketing plan for a new soap powder, "EEZEE-CLEEN".

First, press **F3**. You will see this prompt in the message area (the three lines at the bottom of the screen):



F3 is the function key assigned to the Edit command. You can now edit the home heading.

Use to delete the word "home"; each time you press it, the letter before the cursor (the flashing square) will be deleted. When you have pressed it four times, the screen will be empty except for the minus (-) sign in the top left-hand corner of the screen.

You cannot delete plus (+) and minus (-) indicators; they fulfill an important function in OUTLINER. You'll see what that function is shortly. You can now type your new home heading. Just type:

EEZEE-CLEEN MARKETING PLAN

and press . The home heading will be highlighted:



If you make a typing mistake, press again so that you can edit the line. Use to delete as many letters as you need to, and retype the word. The home heading can be edited and changed, but, unlike all other headings, it cannot be demoted or moved to a new position under another heading.

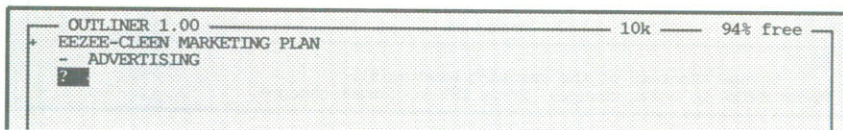
Now you can enter your first heading.

6.4.3 Insert

Press to use the Insert command. OUTLINER will insert a new heading, prefixed by a question mark (?). OUTLINER automatically indents the new heading, since no other heading can be on the same level as the home heading.

Notice, too, that the - to the left of "EEZEE-CLEEN" has become a +. This indicates that the home heading now has a subordinate heading.

Type **ADVERTISING** and press . The screen will look like this:



You now have a question mark at the highlighted cursor on the line below the word "ADVERTISING". This indicates that OUTLINER is expecting you to insert another heading.

Press **6**. The question mark will be indented so that this line is subordinate to the line above. Now type

Appoint Advertising Agency

and press **←**. The screen will look like this:

```

OUTLINER 1.00 ----- 10k ----- 94% free
+ EEZEE-CLEEN MARKETING PLAN
+ ADVERTISING
  + Appoint Advertising Agency
    ?
  
```

Continue to insert lines until you are satisfied with your outline. Just press **←** when you have finished entering each heading.

You can indent by pressing **6** or promote (up to the level of the highest ranked heading other than the home heading, which in this case is "ADVERTISING") by pressing **+**. When you have finished inserting headings, press **F4**.

This is the outline we created:

```

OUTLINER 1.00 ----- 10k ----- 89% free
+ EEZEE-CLEEN MARKETING PLAN
+ ADVERTISING
  + Appoint Advertising Agency
    - possible candidates: Smith & Smith; Freeman Wallis; Hardy's
    - arrange appointments/presentations
    - discuss available budget
  + MARKET RESEARCH
    + Appoint Market Research Consultancy
      - possible candidates: AMR. Research Corp.
      - examine market leaders
      - discuss viability of supermarket promotion
  + LABORATORY/CLINICAL TESTING
    + Confirm results with lab.
      - stress mildness as a selling point
      - no bleach
  + ACCOUNTS
    + Budget discussions
  
```

F1:Expand F3:Edit F5:Move F7:Cut F9:Quit
 F2:Fold F4:Insert F6:Scroll F8:Paste F10:Command

Notice how the leading characters (the + and - signs) indicate whether a heading has subordinate headings beneath it, and how the level of indent indicates how important a heading is. Of course, you don't have to accept your outline as it is; you can add new headings, change the importance of existing headings and move or delete others. Remember that OUTLINER performs these operations on the highlighted heading.

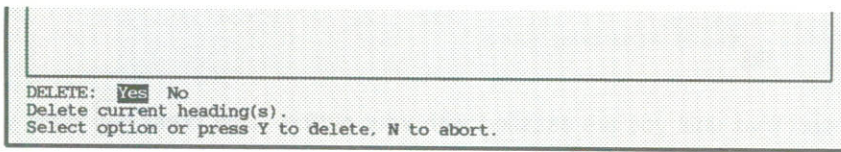
6.4.4 Moving the Highlighted Cursor

To move the highlighted cursor to the next heading of the same rank, use the and keys.

To move the highlighted cursor to the next heading, regardless of its rank, use the and keys.

6.4.5 Cut

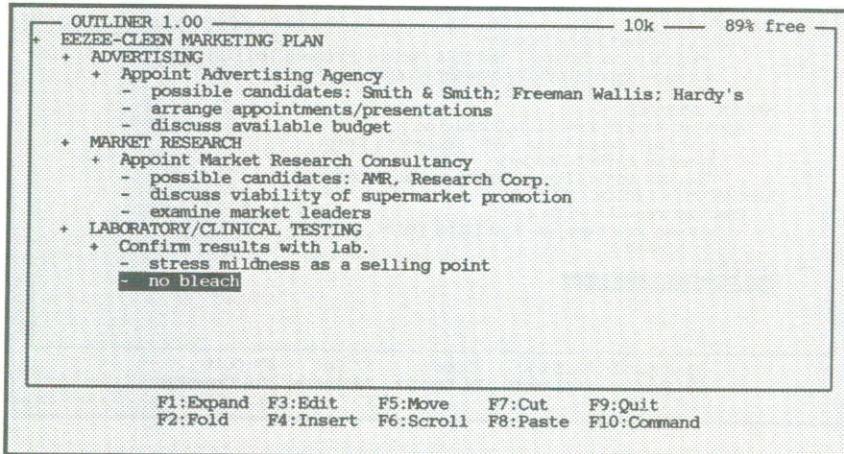
To delete a line in your outline, press . This function key is assigned to the Cut command. You will see these lines in the message area at the bottom of the screen:



Remember that OUTLINER operates on the highlighted heading.

To delete the heading "ACCOUNTS", just move the highlighted cursor to that heading and press . As you can see from the message line above, OUTLINER lets you check that this is the heading you want to delete. Just press .

This is what the screen will look like:



If you delete a heading which has subordinate headings, as this one does, the subordinate headings will be deleted along with the dominant heading.

6.4.6 Paste

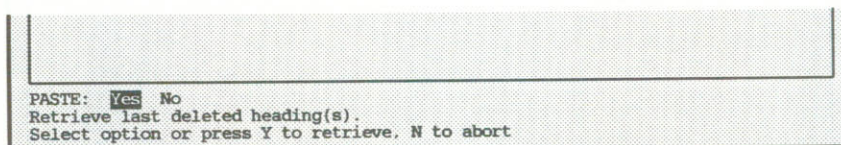
You can use another useful View mode command if you want to retrieve the headings which you have deleted: the Paste command.

Actually, this command has two uses:

- To retrieve headings you deleted accidentally
- To delete headings from their current position and relocate them elsewhere in your outline.

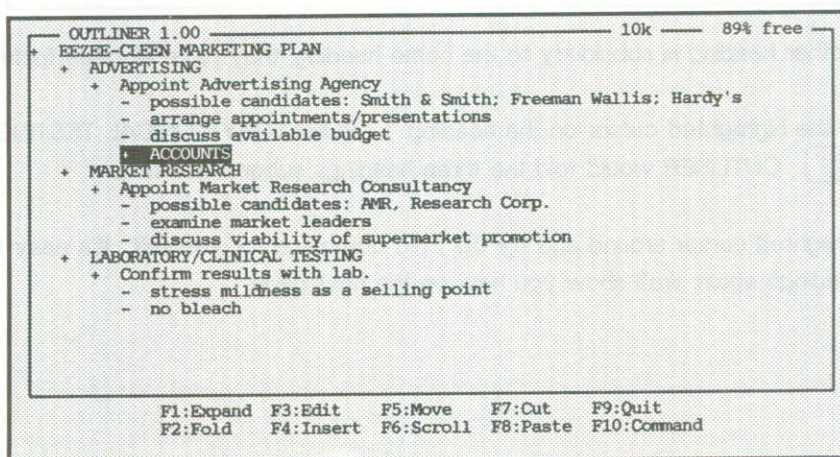
To relocate the headings we just deleted, move the highlighted cursor to the position in the outline where you want them to be and press **F8**.

You will see this prompt in the message area:



To paste the deleted headings into the outline below the heading reading "discuss available budget", move the highlighted cursor to that heading and press **F8**. When OUTLINER asks you to confirm that you want to retrieve the deleted headings, press **Y**.

This is what your screen will look like:



When you retrieve deleted headings, only the dominant heading will be displayed on the screen. Its subordinate heading has been "folded". We'll explain the Fold and Expand commands now.

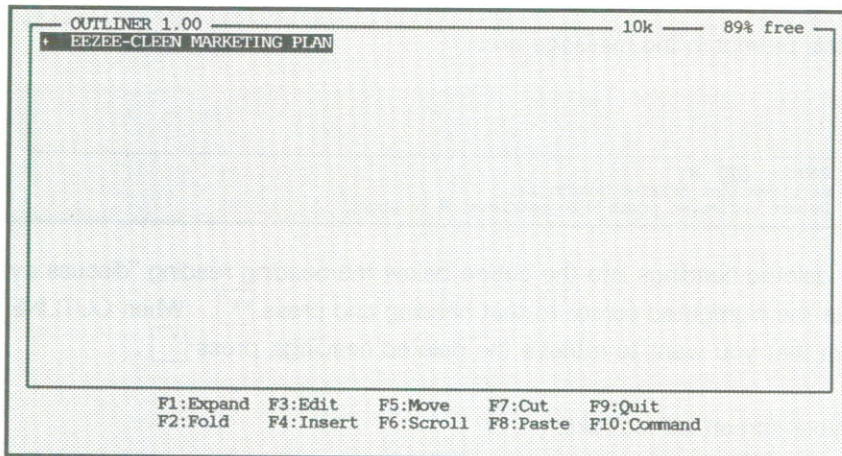
6.4.7 Fold

As we said, when you retrieve deleted text, only the dominant heading is displayed. This doesn't mean that subordinate headings are not retrieved. They are there, but they are Folded. OUTLINER also folds an outline when it is first loaded. The Fold command is assigned to **F2**.

You can expand headings which were folded by pressing **F1**.

When you use this command, just remember one simple rule: OUTLINER folds every heading subsidiary to the current heading (the heading which is highlighted).

Here's an example. Move the cursor to your home heading, "EEZEE-CLEEN MARKETING PLAN", and press **F2**. This is what the screen will look like:



Since every other heading is subsidiary to the home heading, they have all been folded.

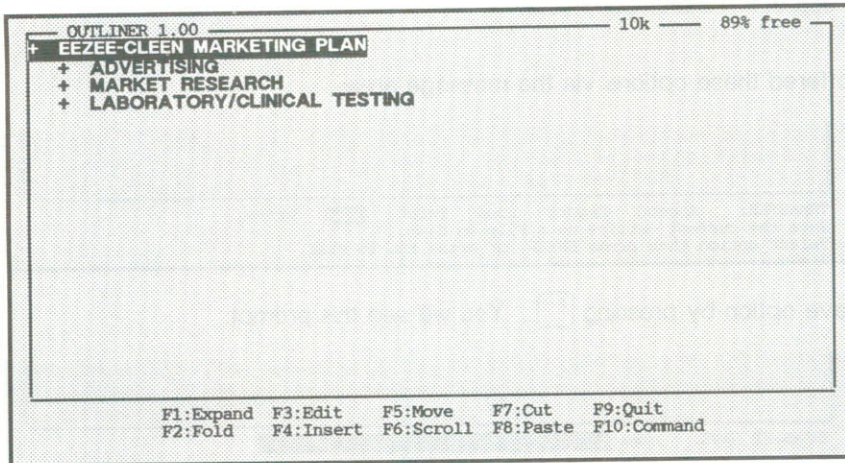
If you placed the highlighted cursor on the heading "LABORATORY/CLINICAL TESTING", and pressed **F2**, OUTLINER would fold the three headings subordinate to it.

Move the highlighted cursor around and try the Fold command for yourself. It's easy to expand the folded headings again; we'll show you how on the next page.

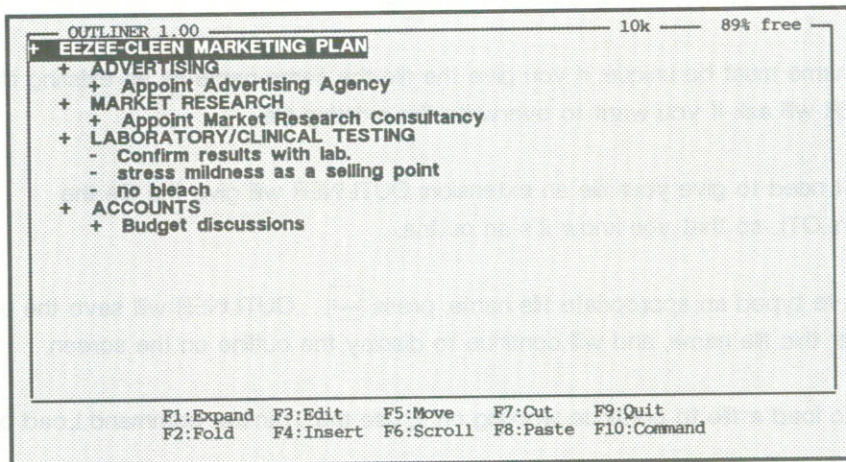
6.4.8 Expand

To Expand headings, just press **F1**. OUTLINER will expand the headings one level at a time.

To use this command, first Fold the outline. Place the highlighted cursor over the home heading and press **F2**. Only the home heading will be displayed. Now press **F1** once. The screen will look like this:



Now press **F1** again. This is what will be displayed:



Continue to press **F1** until your outline is fully expanded.

6.4.9 Save

Now that you know how to create, edit and modify an outline, we'll explain how to Save that outline so that you can load it and work on it at another time.

First of all, press **F10**. This will take you to the Command mode menu.

Press **T** to use the Transfer command.

You will be offered these options via the message area:

```
TRANSFER:  Append  Export  Load  Print  Save  Write
Save the current outline as a file on disk.
Select option then press ENTER, or press ESC to quit.
```

Select the Save option by pressing **S**. You will see this prompt:

```
TRANSFER SAVE:  name: _____
Type file name then press ENTER. Press ESC to abort.
```

Type in a name for the file, but note these two rules:

1. The file name must be unique; if you give the file the same name as an existing file, OUTLINER will ask if you want to overwrite the existing file.
2. You don't need to give your file an extension; OUTLINER will give the file the extension .OTL so that you know it's an outline.

When you have typed an appropriate file name, press **↵**. OUTLINER will save the outline on diskette under this file name, and will continue to display the outline on the screen.

If you want to load a file to continue working on it, use the Transfer command Load option.

All the commands we have used are fully described in the OUTLINER User's Guide.

6.5 DIALER

The DIALER program lets you use the MultiSpeed to make phone calls, and maintains a personal phone directory for use with the program.



The DIALER dials phone numbers only when the optional MultiSpeed 300/1200 BPS Modem is installed and connected. For instructions on how to set up your telephone equipment and the modem, refer to Section 7.2 of this guide.

DIALER keeps your phone directory in a special file called DIALER.DAT file in the RAM disk. When you finish using the DIALER, the file (including any changes you made) is saved back to the RAM disk for you.

6.5.1 Starting DIALER

For a quick start hold down then press , the first letter of DIALER.

```

OUTLINER 1.00 ----- 10k ----- 89% free
+ EEZEE-CLEEN MARKETING PLAN
+ ADVERTISING
+   + Appoint Advertising Agency
+ MARKET RESEARCH
+   + Appoint Market Research Consultancy
+ LABORATORY/CLINICAL TESTING
+   - Confirm results with lab.
+   - stress mildness as a selling point
+   - no bleach
DIALER 1.00 ----- 1 K ----- 100% free
NAME                PHONE                DESCRIPTION
-----
C:\DIALER.DAT ----- Data: 0   of 0
COMMAND: Add Call Delete External Find Help Modify Option Quit
Dials a phone number from the phone directory.
Select command then press ENTER. or type first letter of command name.

```

6.5.2 Selecting a DIALER Command

You can select a DIALER command from the DIALER command menu in two ways:

1. Press the key corresponding to the first letter of the command name. For example, press to select the Add command.
2. Press the space bar or to move the highlighted cursor over the command name and press .

The highlighted cursor in the DIALER window is a bar that covers one whole line of the directory. The highlighted entry is the current entry.

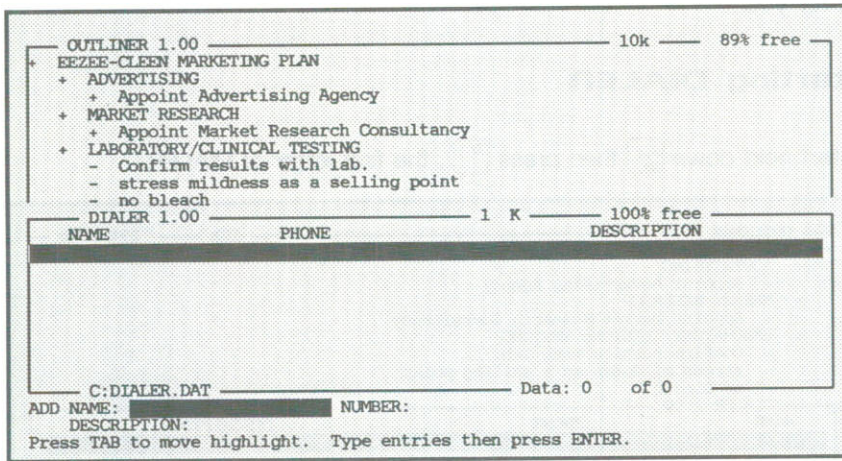
When you execute a DIALER command, it performs the operation on the current entry. For example, the Call command dials the phone number listed in the current entry, the Delete command removes the current entry, and so on.

6.5.3 Typing a Phone Directory

Use the Add command to start typing the phone directory.

You are using DIALER for the first time, so your directory is blank.

To start typing the phone directory, press to select "Add" then press .



Type the name to start the phone directory, then press to move the highlighted cursor to the next field.

RUSSELL MARSHALL

- Moves the highlighted cursor right.
- Moves the highlighted cursor left.

NOTE The highlighted cursor movement is rotational. If you press when it is to the right of "description", it will rotate up to "name". If you press it will rotate back to "description".

This next screen shows the highlighted cursor in the next field.

```

C:DIALER.DAT Data: 0 of 0
ADD NAME: RUSSELL MARSHALL NUMBER:
DESCRIPTION:
Press TAB to move highlight. Type entries then press ENTER.
  
```

Type the phone number then press

513-877-4455

Type the description then press

CARTHAGE SAVINGS & LOAN

If you see an error before you press to enter the new line, press to move the highlighted cursor to the entry you want to correct.

Press or to move the cursor.

Press any key to insert a character at the cursor position.

Press to delete the character to the left of the cursor.

Press to enter the line into the phone directory.

```

OUTLINER 1.00 10k 89% free
+ EEZEE-CLEEN MARKETING PLAN
+ ADVERTISING
+ Appoint Advertising Agency
+ MARKET RESEARCH
+ Appoint Market Research Consultancy
+ LABORATORY/CLINICAL TESTING
- Confirm results with lab.
- stress mildness as a selling point
- no bleach
DIALER 1.00 1 K 97% free
NAME PHONE DESCRIPTION
RUSSELL MARSHALL 513-877-445 CARTHAGE SAVINGS & LOAN

C:DIALER.DAT Data: 1 of 1
COMMAND: Add Call Delete External Find Help Modify Option Quit
Dials a phone number from the phone directory.
Select command then press ENTER. or type first letter of command name.
  
```

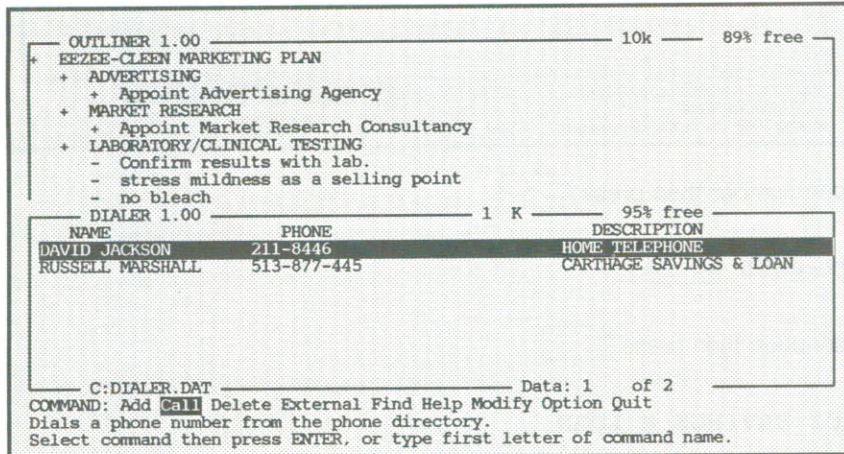
To enter another line into the directory, press to select the Add command then type:

DAVID JACKSON

211-8446

HOME TELEPHONE

This is what your screen should look like now:



Note that the most recently added line always becomes the current line, that is, it is highlighted on the screen.



You do not have to use upper case to type phone directory entries.

New entries are always inserted into the directory on the current (highlighted) line in the DIALER window. When there is already an entry on the current line, this entry and all other entries below it will be moved down one line to make room for the new entry after you press

Now type your own name and telephone number into the directory.

Press

Type **YOUR NAME** then press

Type **200-1000** then press

Press (Don't type a "description". Leave it blank)



You do not need to type in every field. You can leave two of the fields blank and still enter the line. You may want to do this to enter a name and reserve a line until you know the phone number.



6.5.4 Moving the Highlighted Cursor

Let's discuss the movement of the phone directory highlighted cursor for a moment. The highlighted cursor always designates the current line.

For line-by-line movement:

-  To move the highlighted cursor down one line
-  To move the highlighted cursor up one line

On longer phone directories:

-  To move the highlighted cursor to the last line
-  To move the highlighted cursor to the first line

6.5.5 Deleting Lines from the Phone Directory

Use the Delete command to remove a line from the directory.

The DIALER always deletes the highlighted entry, so you will have to move the highlighted cursor to the line you want to delete before you use the Delete command. After a line is deleted, entries below the deleted line in the directory move up one line.

Press  or  to move the highlighted cursor to the line containing your own name.

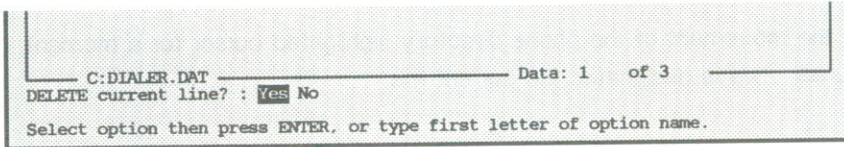
```

OUTLINER 1.00 _____ 10k _____ 89% free
+ EEZEE-CLEEN MARKETING PLAN
+ ADVERTISING
  + Appoint Advertising Agency
+ MARKET RESEARCH
  + Appoint Market Research Consultancy
+ LABORATORY/CLINICAL TESTING
  - Confirm results with lab.
  - stress mildness as a selling point
  - no bleach
DIALER 1.00 _____ 1 K _____ 92% free
NAME          PHONE          DESCRIPTION
YOUR NAME     000-0000
DAVID JACKSON 211-8446      HOME TELEPHONE
RUSSELL MARSHALL 513-877-445  CARTHAGE SAVINGS & LOAN

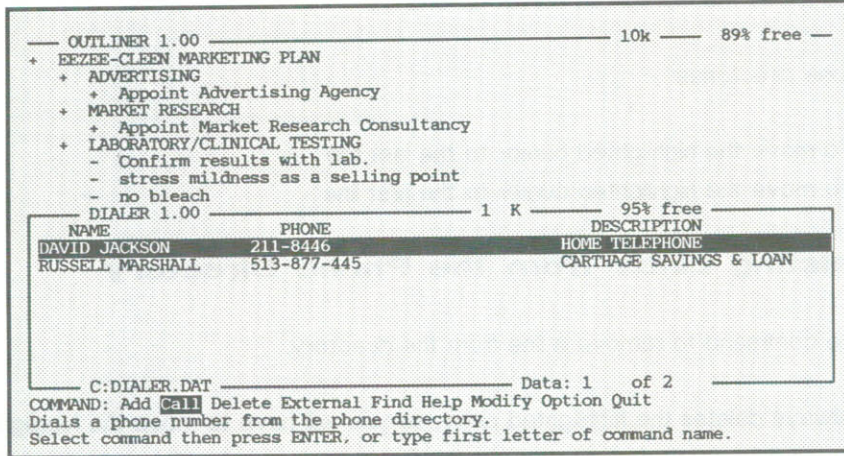
C:DIALER.DAT _____ Data: 1 of 3
COMMAND: Add Call Delete External Find Help Modify Option Quit
Dials a phone number from the phone directory.
Select command then press ENTER, or type first letter of command name.

```

Press **D** to select the Delete command.



Press **Y** or **ENTER** to delete the current line. Your screen will look like this:



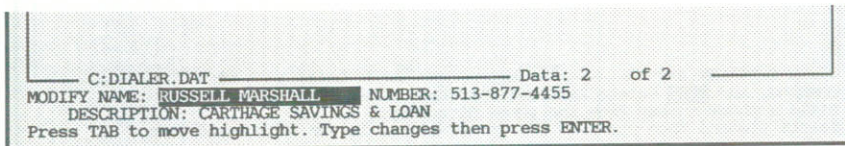
6.5.6 Changing Phone Directory Entries

Use the Modify command to edit the phone directory.

First place the highlighted cursor at the entry you want to change. Move the highlighted cursor with **B** or **I** to designate the current line.

Move the highlighted cursor to the line that contains "RUSSELL MARSHALL".

Press **M** to start the Modify command.








Type **MARSHALL RUSSELL** then press .

To move the highlighted cursor to other fields:

-  Moves the highlighted cursor right to the next field.
-  Moves the highlighted cursor left to the next field.

When you want to type a new item, just type it in, and the original item will be replaced by what you type. If you want to edit an entry without typing over it:

-  Collapses the highlighted cursor to a single-digit cursor. Press  to move the cursor left.
-  Collapses the highlighted cursor to a single-digit cursor. Press  to move the cursor right.
-  Deletes the character to the left of the cursor (a destructive backspace).
- Any key Press any key to insert characters at the cursor position.

Make some more changes if you want. When you are finished, press .

6.5.7 Quitting DIALER

Use the Quit command to quit the DIALER. When you quit DIALER, you have the option of saving or abandoning the changes you have just made in the current session.

Press  to start the Quit command.

```

C:\DIALER.DAT Data: 2 of 2
QUIT confirm: Yes No
"Yes" to save directory in DIALER.DAT file. "No" return to DIALER command line.
Select option then press ENTER, or type first letter of option name.
  
```

Press  to quit the DIALER.

When you quit DIALER, two things happen. The previous version of the directory in drive C: (the RAM disk) is renamed DIALER.BAK, then the updated version of the directory is saved to the DIALER.DAT file.

6.5.8 Backing Up DIALER.DAT

It's a good idea to back up the DIALER.DAT file on to a diskette. At the MS-DOS prompt (>), execute the COPY command.

```
A>COPY C:DIALER.DAT B:_
```

Press  to copy the DIALER.DAT file (under the same file name) to the diskette in drive B:

The DIALER.DAT file is always created, opened and closed in the RAM disk. When you start up DIALER for the first time, this DIALER.DAT file is created in the RAM disk.

After typing your directory, the DIALER.DAT file is stored in the RAM disk. The next time you use the DIALER, the DIALER.DAT file is opened and you will see your directory on the screen.

When you use the Quit command to quit the DIALER after updating the directory, it is stored in the DIALER.DAT file, but the old file, that is, the old phone directory before changes, is renamed DIALER.BAK.

Because the DIALER.DAT is always in the RAM disk, you should keep these points in mind:

- Unlike other files, the DIALER.DAT file name is restricted. When you start the DIALER, the program looks for "DIALER.DAT" file in the RAM disk. This means you cannot change the name of the DIALER.DAT file.
- If you want to store your DIALER.DAT file on a diskette, you will have to use the MS-DOS COPY command to do this. The following command at the MS-DOS prompt will copy the DIALER.DAT file to a diskette in drive B.

```
A>COPY C:DIALER.DAT B:_
```

- To copy the DIALER.DAT file from the diskette back to the RAM disk with the same file name, type:

```
A>COPY B:DIALER.DAT C:_
```

- It's a good idea to back up the DIALER.DAT file frequently because if you change the reserved work size of any built-in program or disable the RAM disk with the SETUP program, you will lose the DIALER.DAT file in the RAM disk.

Both of these SETUP options, changing work size ("Pop") and resetting the RAM disk size ("Ramdisk"), re-initialize the memory and the RAM disk.

6.6 RUNNING THREE PROGRAMS AT ONCE

As we have said, you can run other programs from the POP UP key while you are running one program as a stand-alone program.

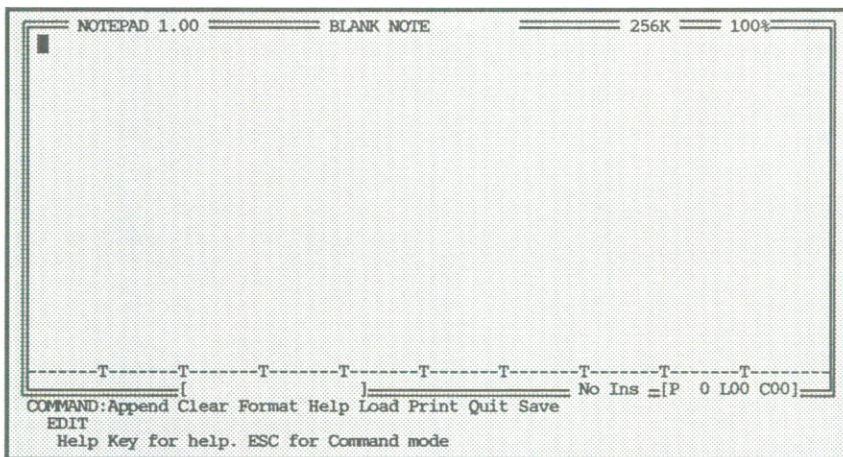
The only restriction is that you cannot run any program from the POP UP key while you are running the same program as a stand-alone program. For example, you cannot run NOTEPAD from the POP UP key while you are running it from the MS-DOS command line as a stand-alone program.

We'll show you what the screen looks like with three programs running at once.

First of all, run NOTEPAD as a stand-alone program by typing "notepad" at the MS-DOS prompt:

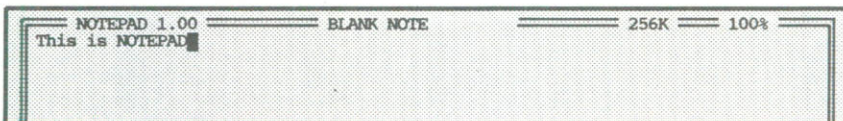
```
A>notepad_
```

Press  . The screen will look like this:

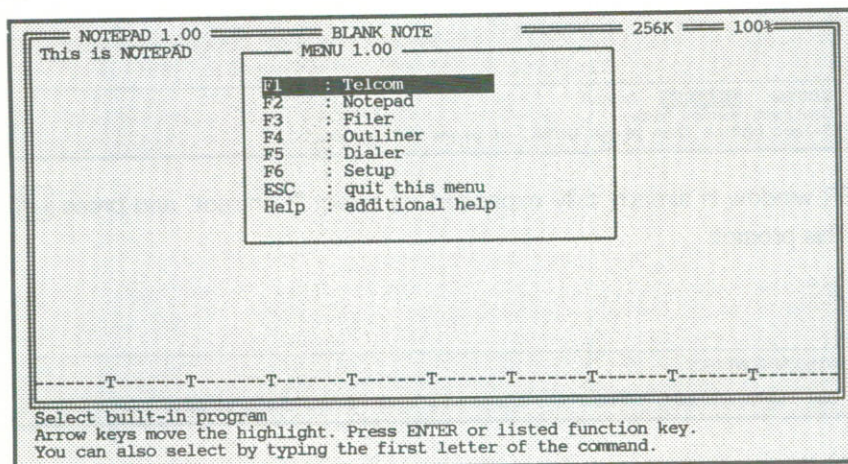


NOTEPAD is in Edit mode.

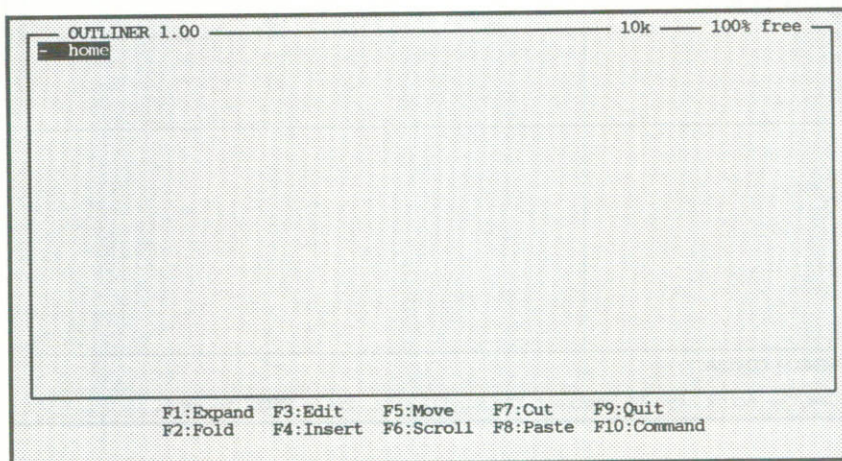
Type "This is NOTEPAD" at the top of the screen:



Hold down  until the MENU window is displayed on the screen:





Select OUTLINER from the MENU window by pressing . The screen will look like this:

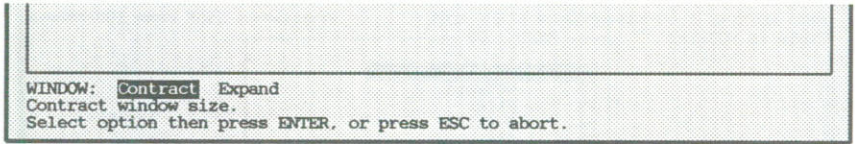


As you can see, the OUTLINER window covers the suspended NOTEPAD window.

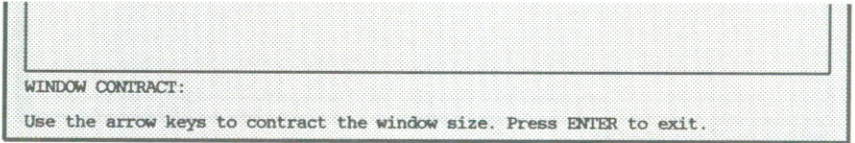
Now we'll change the size of the OUTLINER window so that the NOTEPAD window is also visible.

Press  to switch OUTLINER to Command mode. Then type  to select the Window command from the OUTLINER Command mode menu.

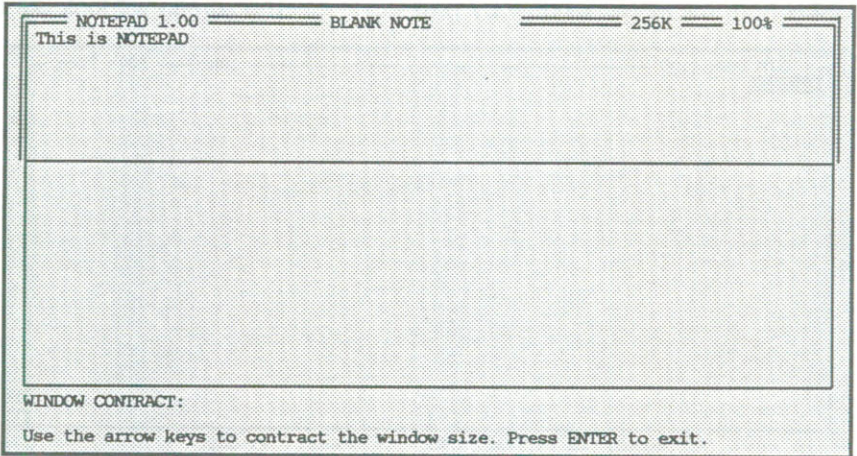
You will see this prompt:



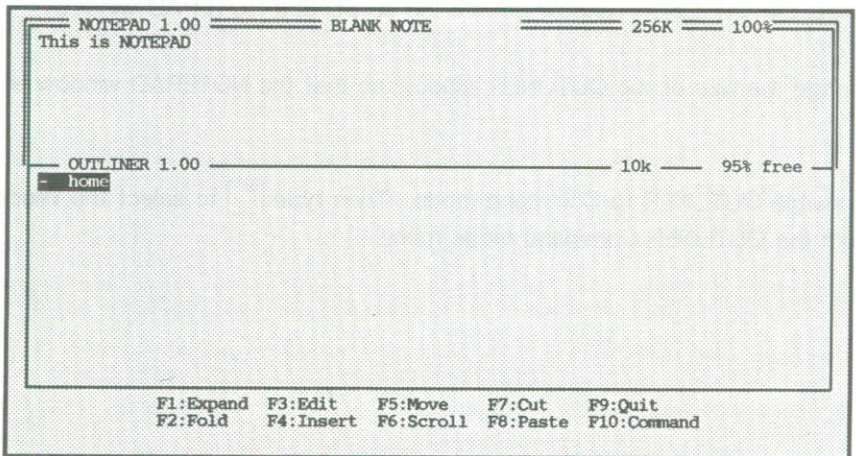
The OUTLINER window is already fully expanded, so select "Contract" and press . You will then see this prompt:



Press  eight times. The screen will look like this:



Press . You can now use the OUTLINER with NOTEPAD suspended in the background.



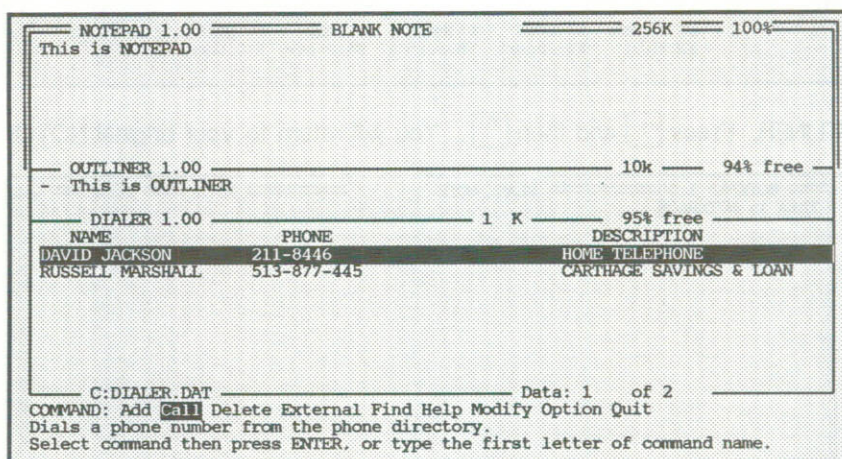
You can now begin an outline if you like; NOTEPAD will remain suspended in the background.

For now, delete the word "home" by pressing **F3** and then pressing **←** four times, then type a new heading:

This is OUTLINER

Now we'll start DIALER from the POP UP key. Hold down **Pop Up** to display the MENU window and then press **D**.

The screen will look like this:



You now have DIALER running from the POP UP key, with OUTLINER and NOTEPAD suspended.

To return to your original program, NOTEPAD, you can either suspend the DIALER and OUTLINER programs or quit DIALER first, then OUTLINER.

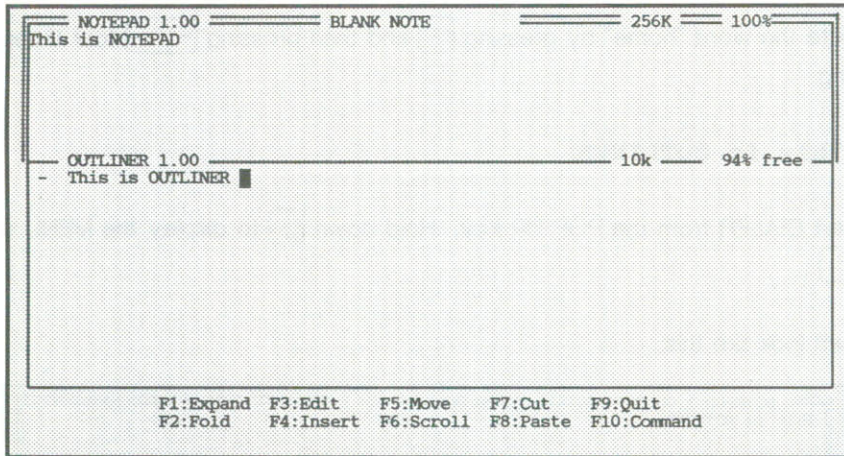
To suspend the DIALER and OUTLINER programs:

Hold down **Alt** and then press **Pop Up**. You will return to the stand-alone program (in this case, NOTEPAD). Press **Pop Up** to resume the suspended programs.

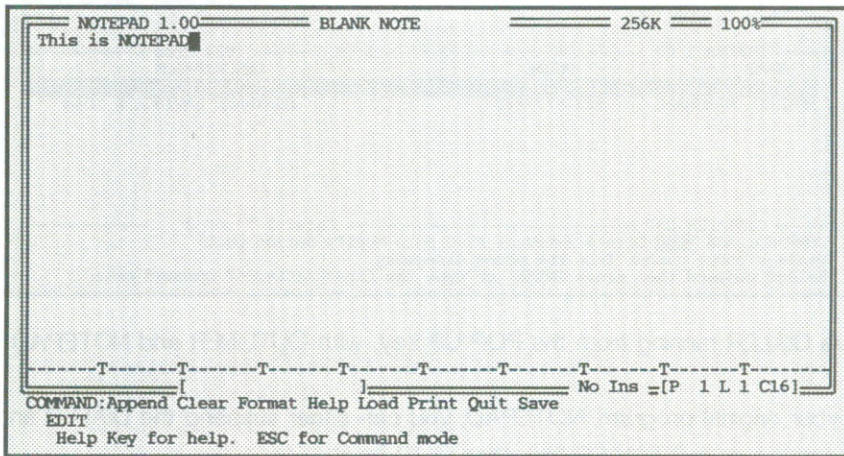
To quit the pop programs:

Select the Quit option from the DIALER menu by pressing **Q**. Then confirm that you want to leave DIALER by pressing **Y**.

You will return to this screen:



Now quit OUTLINER. Press **F9** and then **Y**. You will return to your original NOTEPAD screen:



After you press **Alt** **Pop Up** to suspend the built-in programs started by using **Pop Up**, and return to the stand-alone program, you can quit the stand-alone program. After you return to the MS-DOS command line, you can restore the suspended programs by pressing **Pop Up**.

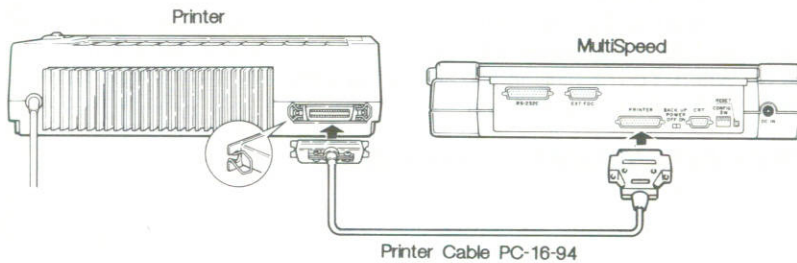
CHAPTER 7 CONNECTING PERIPHERAL DEVICES

7.1 PRINTER CONNECTION	108
7.2 TELCOM AND DIALER CONNECTIONS	109
7.2.1 Connecting the Built-In Modem	109
7.2.2 External Modem Connection	110
7.3 MONITOR CONNECTION AND SETTINGS	112
7.3.1 Type of Monitor to Use	112
7.3.2 Connecting the Monitor	112
7.3.3 Removing and Assembling the LCD Cover	116
7.3.3.1 Removing the LCD Cover	116
7.3.3.2 Assembling the LCD Cover	118
7.4 THE MULTISPEED AS EXTERNAL DRIVES	120
7.4.1 Connect to EXT FDC Port	120
7.4.2 Confirm Your Version of MS-DOS	121
7.4.3 CONFIG.SYS File for MS-DOS Version 3.2	121
7.4.4 CONFIG.SYS File for MS-DOS Versions 3.1 and Lower	123
7.4.5 SETUP for External Drives	124
7.4.6 When You're Finished Transferring Files	127
7.4.7 Disk Drive Designations	128
7.5 OTHER DATA TRANSFER PROGRAMS	129

7.1 PRINTER CONNECTION

Follow these instructions to connect a printer. To connect a printer to the MultiSpeed, you will need MultiSpeed Printer Cable PC-16-94.

1. Place your printer near the MultiSpeed.
2. Turn off the power switches on the printer and the MultiSpeed.
3. Connect the small end of the Printer Cable to the parallel printer port labeled PRINTER on the rear of the MultiSpeed.
4. Connect the large end of the Printer Cable to the parallel interface on the printer.



5. Turn the MultiSpeed POWER switch on.
6. Turn the printer on.
7. Make sure your printer is on line.



Always turn the MultiSpeed on before turning the printer on. When you use your MultiSpeed with peripheral devices such as a printer, a monitor, or an external modem, always follow this procedure:

1. **Connect the peripheral devices properly.**
2. **Turn the MultiSpeed on.**
3. **Turn the peripheral device on.**

7.2 TELCOM AND DIALER CONNECTIONS

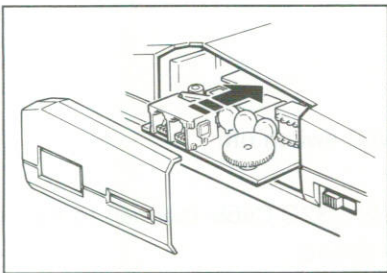
7.2.1 Connecting the Built-In Modem

With the MultiSpeed 300/1200 BPS Modem, you can use the built-in TELCOM and DIALER program. Follow the simple steps below to connect the MultiSpeed to your telephone system. For detailed instructions on how to run TELCOM and DIALER, refer to the TELCOM and DIALER User's Manuals.

Here's a list of the hardware you need to use the MultiSpeed with the 300/1200 BPS Modem:

- MultiSpeed
- 300/1200 BPS Modem
- A telephone connected to a telephone system with a cable that uses RJ11 modular connections.
- MultiSpeed Phone Cable (PC-8499A-04) (included with optional 300/1200 BPS Modem).

300/1200 BPS Modem Installation



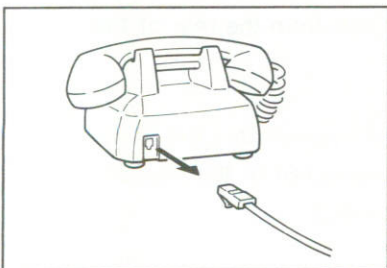
Make sure the MultiSpeed POWER switch is off.

Remove the faceplate on the left side of the MultiSpeed. Insert the 300/1200 BPS Modem as shown in the illustration.

The TEL and LINE port openings are covered by plastic knockouts. Remove the plastic knockouts before you replace the faceplate.

Check that the modem is securely in position, then replace the faceplate.

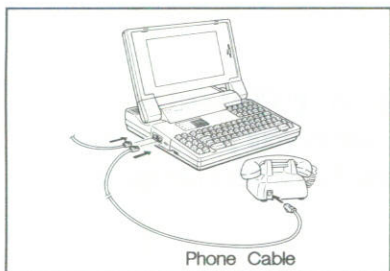
Connection to LINE Port



Disconnect the telephone from the telephone system by removing the male RJ11 connector from the rear of the telephone.

Connect the disconnected end of the line system cable to the LINE port on the side of the MultiSpeed.

Connection to TEL Port



Connect one end of the Phone Cable to the TEL port on the side of the MultiSpeed.

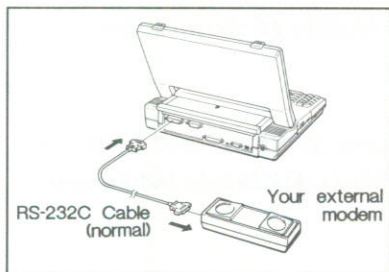
Connect the other end of the Phone Cable to the telephone.

Mount the MS-DOS system diskette in drive A of the MultiSpeed. Turn the MultiSpeed POWER switch on. Now you are ready to run TELCOM and DIALER according to the instructions in the TELCOM and DIALER user manuals.

7.2.2 External Modem Connection

The MultiSpeed can communicate through a variety of external modems. Here is a list of the hardware you need to connect an external modem:

- MultiSpeed
- An external modem of your choice
- MultiSpeed RS-232C Cable (normal) (PC-16-95)
- A telephone connected to the telephone system



Turn the MultiSpeed POWER switch off.

Connect one end of the RS-232C Cable (normal) to the RS-232C port of the MultiSpeed.

Connect the other end of the cable to the RS-232C port on the modem.

If you are using a direct connect modem:

- You must use a telephone that uses modular connections. Disconnect the telephone from the telephone system by removing the male RJ11 jack from the rear of the telephone.
- Connect the disconnected telephone system cable to the appropriate port of the modem. Some modems require that the telephone be connected to the modem also. Connect the telephone to the modem with the cable provided.

If you are using an acoustic modem:

- Connect the telephone receiver to the modem according to the instructions given in your modem's owner's manual.

Turn the MultiSpeed POWER switch on, then turn the modem power switch on. You are now ready to use TELCOM according to the instructions described in the TELCOM User's Manual.



Always turn the MultiSpeed power switch on before turning the external modem on.



The MultiSpeed's built-in DIALER program cannot be used when you are using an external modem.

7.3 MONITOR CONNECTION AND SETTINGS

The MultiSpeed is equipped with a large LCD (80 columns x 25 lines) that folds down onto the keyboard for portability and convenience. You can also connect the MultiSpeed to full-size monitors.

7.3.1 Type of Monitor to Use

An IBM Color Display or NEC Multisync monitor (or their compatibles) can be connected to the MultiSpeed.

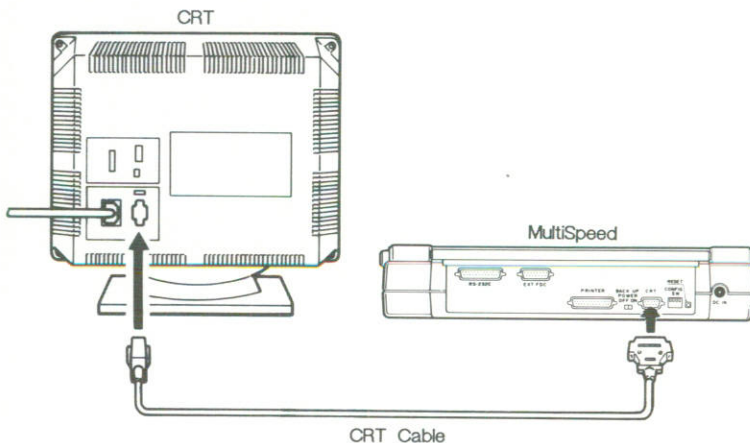
7.3.2 Connecting the Monitor

The monitor can be connected directly to the MultiSpeed. However, after you connect the monitor you will need to make some settings with the SETUP program.

1. Turn the MultiSpeed POWER switch off.
2. Be sure the monitor power switch is off.
3. Place the monitor where it is just below eye level.

If your monitor has a permanently attached CRT cable, use that cable to connect your monitor to the MultiSpeed. Otherwise, use a cable that is appropriate for the type of monitor you have.

4. Plug the monitor cable into the CRT connector on the back of the MultiSpeed. If you are using a cable that is detachable from the monitor, be sure the other end of the cable is securely connected to the monitor.



- Mount the MS-DOS system diskette in drive A, turn the MultiSpeed on, then turn the monitor on.
- After the MS-DOS prompt is displayed, type **SETUP** then press . The SETUP main menu will be displayed.

```

<SCREEN>
Color mode          Emulation  Contrast
Instensity mode    Bold      Contrast

COMMAND:Clock Drive Exit Fdc Pop Quit Ramdisk Screen
Change CPU clock speed.
Select command or press first letter of command.

```

- Press to select the "Screen" command.

```

60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F
70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F

Screen: Active Color Exit Intensity Palette
Change active console.
Select a parameter and press ENTER.

```

- The "Active" option is already highlighted, so just press .

```

60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F
70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F

Active console : LCF CRT
Make your selection and press ENTER.

```

- Press the space bar once to select "CRT" then press .

```

60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F
70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F

Change the active console to the CRT. Is the CRT ready now? Yes No
Select "Yes" or "No" and press ENTER.

```

- The monitor should be on and properly connected to the MultiSpeed. Press or . The MultiSpeed LCD is disabled, and you will see the screen on the monitor.

```

60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F
70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F

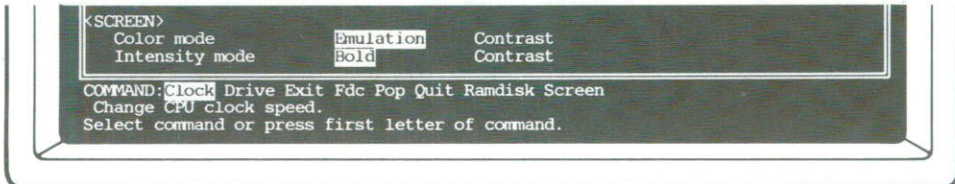
Screen:Active Color Exit Intensity Palette
Change active console.
Select a parameter and press ENTER.

```

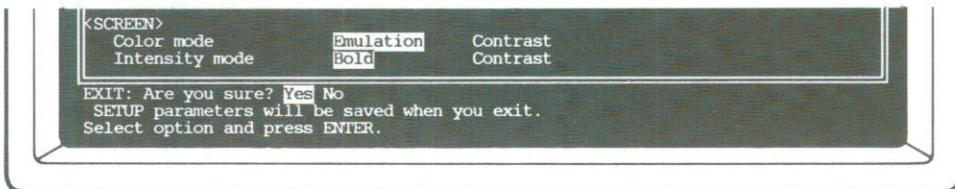


If the monitor is not connected or not turned on when you press or , nothing will be displayed on the LCD or CRT. Press to recover the LCD screen, correct, then try again.

11. Type to return to the main SETUP screen.



12. Press (for "Exit").

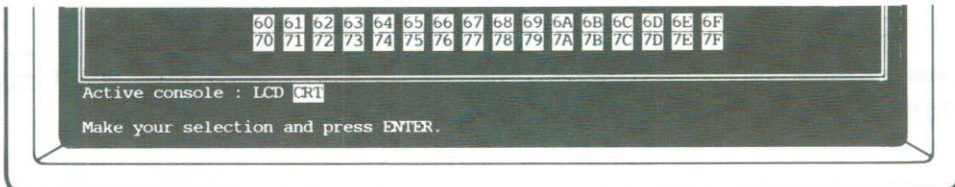


13. Press (for "Yes"). You will see the MS-DOS prompt on the monitor.



If you turn the MultiSpeed off then turn it on again, the monitor will remain the active console.

14. When you want to disable the monitor and return to using the LCD, repeat the procedure, but select "LCD" when you see this screen:



Be sure to reset the screen for the LCD again before you disconnect the monitor and remove the MultiSpeed. If you do not, the next time you boot the MultiSpeed, your screen will remain blank.

If the MultiSpeed LCD remains blank after you boot (and you suspect the MultiSpeed has been disconnected from the monitor without setting it back to the "LCD" setting), turn the Multispeed off, connect the monitor then re-boot. Execute SETUP from the monitor display to set the "Active" setting to "LCD".

If a monitor is not available, use this "blind" procedure to recover the screen on the LCD:

1. Be sure the MS-DOS system diskette is mounted in drive A.
2. Turn the MultiSpeed on. Wait for the DRIVE A access indicator to light then go out.
3. Press and hold it down for about three seconds.
4. Press , release and pause.
5. Press again, release and pause.
6. Press , release and pause.
7. Press . This should display the SETUP screen on the menu.
8. Press twice, then press to re-set the LCD and return to the MS-DOS prompt.

7.3.3 Removing and Assembling the LCD Cover

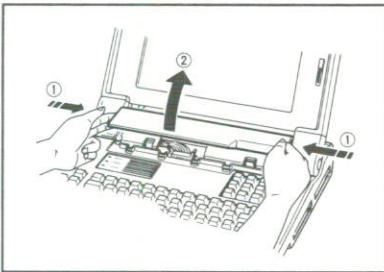
7.3.3.1 Removing the LCD Cover

When you are using the MultiSpeed connected to a video monitor, you can remove the LCD from the MultiSpeed and set it aside. This will make it easier to see the screen of the monitor.



Turn the MultiSpeed off before you remove the LCD cover.

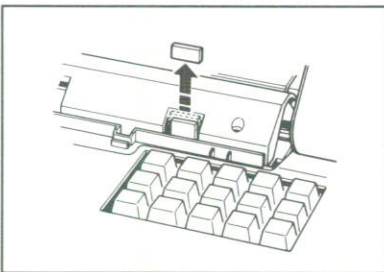
Remove the Hinge Cover



Move the LCD cover forward to release the lock, then move it all the way back.

Gently press in the sides of the hinge cover (1), then rotate it up in the direction indicated by the arrow (2).

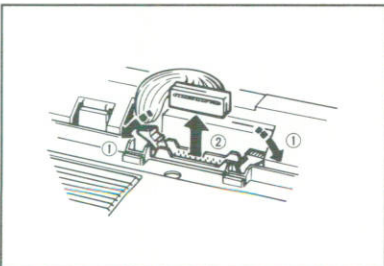
Remove the Spacer



Use the tip of a pen or pencil to push the spacer up and out of its slot on the right hinge lock.

Put the spacer away in a safe place so you won't lose it.

Release the Connector

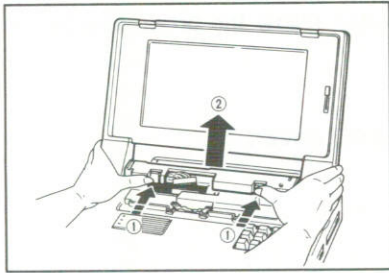


Release the clips on the LCD connector (1). Grip the connector by its plastic housing, then pull it up (2) to disconnect it.



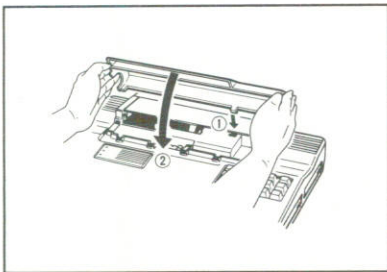
Do not pull the connector up by the wires.

Remove the LCD Cover



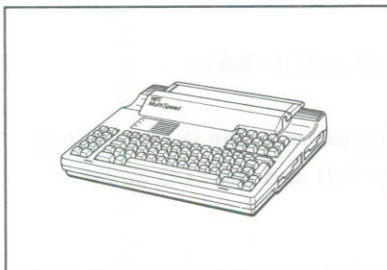
Press both hinge locks in to release the LCD cover from the main unit (1). Hold the LCD cover firmly as you pull it up (2).

Fasten the Hinge Cover



Match the hole in the main unit on the right (1) with the tab on the rear edge of the hinge cover (2). Insert the tab then press down gently on the cover to fasten it in place.

Ready to Use



With the LCD cover removed, you can now use the MultiSpeed more comfortably with a video monitor.

Be sure to put the LCD cover away in a safe place where the screen will not be damaged.

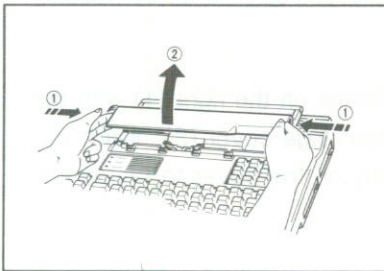
7.3.3.2 Assembling the LCD Cover

When you have finished using the MultiSpeed with the video monitor, follow the procedure below to assemble the MultiSpeed and LCD cover.



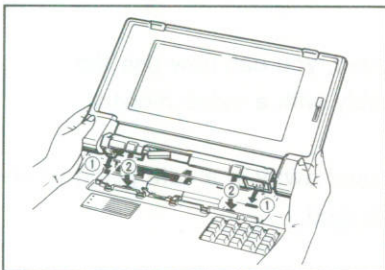
Turn the MultiSpeed off before you try to attach the LCD cover.

Remove the Hinge Cover



Gently press in the sides of the hinge cover (1), then rotate it up in the direction indicated by the arrow (2).

Attach the LCD Cover



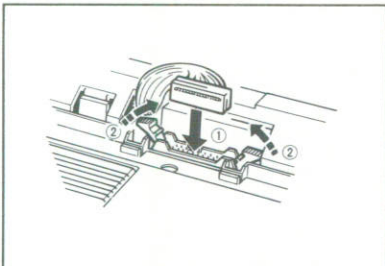
Match the holes in the main unit with the tabs on the rear edge (1) and front edge (2) of the LCD cover.

Press the LCD cover power until it clicks.



Make sure the connector cable is not pinched between the main unit and the LCD cover.

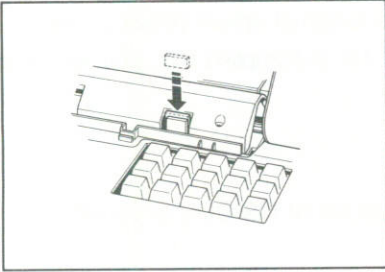
Fasten the Connector



Match the square tab on the rear of the LCD cable connector with the notch on the receptacle. Push the connector down (1), then fasten the clips (2) to hold it in place.

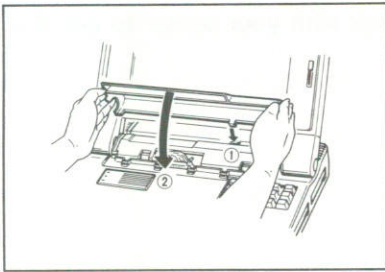
Stow the excess cable in the LCD cover.

Insert the Spacer



Insert the spacer in the slot of the right hinge lock.

Attach the Hinge Cover



Match the hole in the main unit on the right with the tab on the rear edge of the hinge cover. Insert the tab, then press down gently on the cover to fasten it in place.

Adjust the Screen Angle



The MultiSpeed is now assembled. Move the LCD cover to a comfortable angle then lock it in place with the lock button on the right side of the hinge assembly.

7.4 THE MULTISPEED AS EXTERNAL DRIVES

You can use the MultiSpeed disk drives (drive A and drive B) as external drives (slave drives) when the MultiSpeed is connected to an IBM PC or IBM PC/XT. To accomplish this, you will need the External Transfer Cable Kit (PC-16-97) which includes:

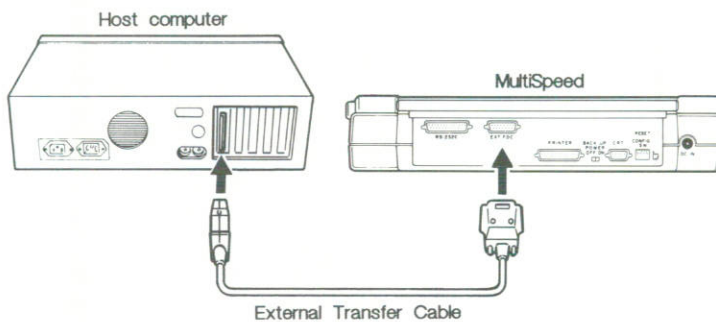
- MultiSpeed External Transfer Cable
- One 5 1/4 inch floppy diskette (this is needed if your version of MS-DOS is Version 3.1 or lower).



The host computer must have an external drive connector that is 100% compatible with an PC/XT FDC (floppy disk controller) board. If your machine has a different FDC board with no connector for external drives, check with your dealer to see if a connector can be installed.

7.4.1 Connect to EXT FDC Port

1. Turn off the MultiSpeed and the host computer.
2. Connect the External Transfer Cable to the EXT FDC port of the MultiSpeed.
3. Connect the other end of the transfer cable to the 37-pin connector for external disk drives of the host computer.



7.4.2 Confirm Your Version of MS-DOS

Before you can configure your system to use the MultiSpeed disk drives as external drives, you must determine if you are using MS-DOS Version 3.2 or a lower version.

If you don't know which version of MS-DOS you are using on the host computer, use the MS-DOS VER command. Boot your system on the host computer, then at the MS-DOS prompt line, just type **VER**, then press .

```
A>VER
IBM Personal Computer DOS Version 3.10
A>_
```

This example shows "Version 3.10" as the current version on the host computer.

Now you have to create a special CONFIG.SYS file for the system diskette of the host computer. There are two alternative procedures to follow depending on what version of MS-DOS you are using on the host computer.

If you are using MS-DOS Version 3.2, use the procedure in the next section. If you have a lower version of MS-DOS (Version 3.1 or lower), skip the next section and follow the procedures described in Section 7.4.4.

7.4.3 CONFIG.SYS File for MS-DOS Version 3.2

1. If there is a CONFIG.SYS file on the system diskette that you want to save for later use, rename it now.

```
A>RENAME CONFIG.SYS CONFIG.OLD_
```

2. Press . The contents of the original CONFIG.SYS file are now stored in the CONFIG.OLD file. Now you can create the new CONFIG.SYS file.
3. Use the COPY CON: command to create the new CONFIG.SYS file.

```
A>COPY CON: CONFIG.SYS_
```

4. Press then type:

```
BUFFERS = 15
FILES = 20
DEVICE = DRIVER.SYS /D:02
DEVICE = DRIVER.SYS /D:03
```

Press after each line.

5. Press then press .

The file is created. Your screen should look like this:

```
A>COPY CON: CONFIG.SYS
BUFFERS = 15
FILES = 20
DEVICE = DRIVER.SYS /D:02
DEVICE = DRIVER.SYS /D:03
^Z
    1 File(s) copied
A>_
```

6. Make sure your system diskette has the DRIVER.SYS file. This file is included on the standard MS-DOS/PC-DOS Version 3.2 system diskette. If you want to check, type **DIR DRIVER.SYS** then press to list the file.

```
A>DIR DRIVER.SYS
Volume in drive A has no label
Directory of A:\

DRIVER  SYS    1115  12-30-86  12:00p
        1 File(s)  217088 bytes free
A>_
```

7. Turn the host computer off and re-boot. You should see the messages:

```
Loaded External Disk Driver for Drive C
Loaded External Disk Driver for Drive D
Current date is Tue 1-01-1980
Enter new date (mm-dd-yy): _
```

8. Boot the MultiSpeed. Now you are ready to use SETUP to set up the MultiSpeed drives as external disk drives.

7.4.4 CONFIG.SYS File for MS-DOS Versions 3.1 and Lower

If you have a version of MS-DOS lower than Version 3.2, you'll have to create a new CONFIG.SYS file on your system diskette and copy the EXTERN.SYS file from the diskette provided with the External Transfer Cable Kit.

1. First, you may want to rename the current CONFIG.SYS file on the system disk of the host computer.

```
A>RENAME CONFIG.SYS CONFIG.OLD _
```

2. Press . The contents of the original CONFIG.SYS file are now stored in the CONFIG.OLD file. Now you can create the new CONFIG.SYS file.
3. Use the COPY CON: command to create the new CONFIG.SYS file.

```
A>COPY CON: CONFIG.SYS _
```

4. Press then type:

```
BUFFERS = 15  
FILES = 20  
DEVICE = EXTERN.SYS
```

Press after each line.


5. Press then press .

The file has been created. Your screen should look like this:

```
A>COPY CON: CONFIG.SYS  
BUFFERS = 15  
FILES = 20  
DEVICE = EXTERN.SYS  
^Z  
1 File(s) copied  
A>_
```

- In drive B, insert the floppy diskette provided with the External Transfer Cable Kit.
- Use the MS-DOS copy command to copy the EXTERN.SYS file from drive B to your system diskette in drive A.

```
A>COPY B:EXTERN.SYS A:_
```

- Press .
- When the file is copied to drive A, turn the host computer off and re-boot. Your screen should look like the one below:

```
External disk driver Ver 1.00
Copyright (C) NEC Corporation. All Rights Reserved.

Installing disk driver for external drive C: and drive D:
FORMAT, DISKCOPY and DISKCOMP commands are not supported.

WARNING! DO NOT USE THE FORMAT COMMAND TO FORMAT
A DISKETTE IN ONE OF THE EXTERNAL DRIVES. SYSTEM
FORMAT A DISKETTE IN THE INTERNAL DRIVE OR FIXED DISK!!

Current date is Tue 1-01-1980
Enter new date (mm-dd-yy): _
```

- Boot the MultiSpeed. Now you are ready to use SETUP to set up the MultiSpeed drives as external disk drives.

7.4.5 SETUP for External Drives

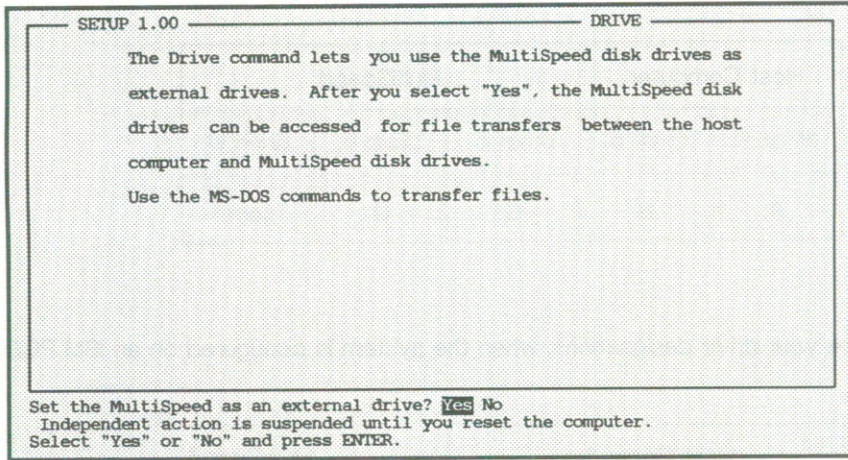
You have to use the Drive command of the SETUP program to set the MultiSpeed for the external drive mode.

- At the MS-DOS prompt, press   to display the main SETUP screen.

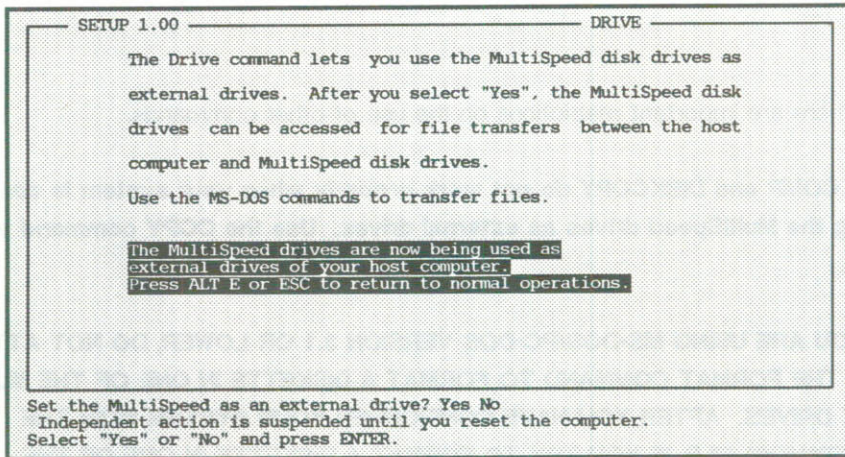
```
{SCREEN>
Color mode          Emulation  Contrast
Intensity mode     Hold      Contrast

COMMAND: Clock Drive Exit Fdc Pop Quit Ramdisk Screen
Change CPU clock speed.
Select command or press first letter of command.
```

2. Press to select "Drive".



3. Press or to set the MultiSpeed for the external drive mode. A message prompts you about how to return to normal operations after you are finished transferring files:



4. Use the MS-DOS COPY command to transfer files between the host and MultiSpeed.

These are your drive designations, when the system is configured on an IBM PC:

Host Computer		MultiSpeed		
drive A:	drive B:	drive A:	drive B:	drive C:
A:	B:	C:	D:	none

These are your drive designations, when the system is configured on an IBM PC/XT:

Host Computer			MultiSpeed		
drive A:	drive B:	drive C:	drive A:	drive B:	drive C:
A:	B:	C:	D:	E:	none

Notice that there are important restrictions on the use of other commands.



DISKCOMP and DISKCOPY do not work properly when your system is configured for using the MultiSpeed drives as external drives. Use the COPY command to transfer files.



IF YOU ARE USING MS-DOS/PC-DOS VERSION 3.1 OR LOWER, DO NOT ATTEMPT TO USE THE FORMAT COMMAND TO FORMAT A DISKETTE IN ONE OF THE MULTISPEED DISK DRIVES. AFTER YOU HAVE CONFIGURED YOUR SYSTEM WITH THE EXTERN.SYS FILE, IF YOU TRY TO FORMAT A DISKETTE IN ONE OF THE MULTISPEED DRIVES, YOU MAY FORMAT ONE OF YOUR DISKS IN THE HOST COMPUTER!



When the MultiSpeed is in the external drive mode, the MultiSpeed keyboard is disabled.



The MultiSpeed RAM disk (drive C:) cannot be accessed by the host computer for file transfer when the MultiSpeed external drive mode is on.





7.4.6 When You're Finished Transferring Files

If you have renamed your original CONFIG.SYS file, you may want to restore your old CONFIG.SYS file, but first you'll have to rename the present CONFIG.SYS file.

```
A>RENAME CONFIG.SYS CONFIG.SLV_
```

1. Press  to rename the file.
2. Now rename CONFIG.OLD.

```
A>RENAME CONFIG.OLD CONFIG.SYS_
```

3. Press  then disconnect the External Transfer Cable from the host computer and the MultiSpeed.
4. Press  or   on the MultiSpeed keyboard to turn the external drive mode off, then quit the SETUP program.



In order to avoid having to rename your old CONFIG.SYS and create a new one, you may want to create a special boot diskette for your PC/XT to boot from when you want to use the MultiSpeed as a slave drive unit.



If it's not possible to transfer files between the MultiSpeed's 3.5" disk drives and your host computer, then use serial data transfer. You'll need a serial cable (null modem type) that can be connected to the RS-232C ports of the MultiSpeed and the host unit.

7.4.7 Disk Drive Designations

You can also add the external driver instruction (EXTERN.SYS) to your original CONFIG.SYS file. When you set part of the memory aside for use as a RAM disk by including VDISK.SYS in your CONFIG.SYS file, this will change your disk drive designations.

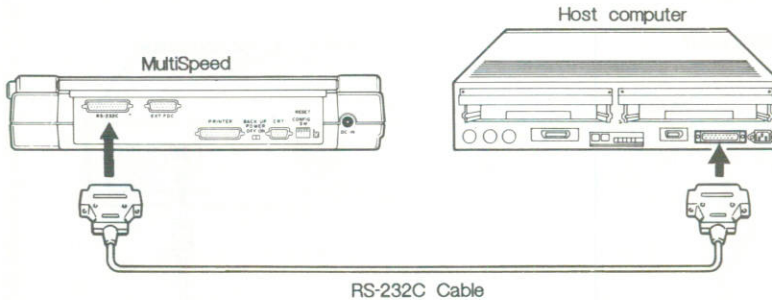
CONFIG.SYS	If the host computer has drive A: and drive B:		If the host computer has drive A:, B:, and C: (drive C: is the hard disk)	
	MultiSpeed		MultiSpeed	
	drive A:	drive B:	drive A:	drive B:
DEVICE = EXTERN.SYS	C:	D:	D:	E:
DEVICE = VDISK.SYS DEVICE = EXTERN.SYS	D:	E:	E:	F:
	(Host computer RAM disk: C:)		(Host computer RAM disk: D:)	
DEVICE = EXTERN.SYS DEVICE = VDISK.SYS	C:	D:	D:	E:
	(Host computer RAM disk: E:)		(Host computer RAM disk: F:)	

7.5 OTHER DATA TRANSFER PROGRAMS

There are many other programs with data transfer utility programs that you can use to transfer data between a computer and the MultiSpeed. To connect the MultiSpeed to the host computer, the minimum hardware requirements are:

- A MultiSpeed
- A host computer
- A MultiSpeed RS-232C Cable (reverse)

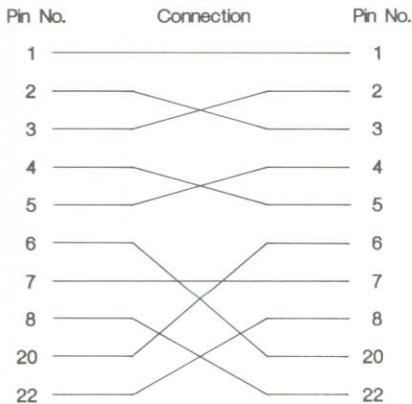
1. Connect the RS-232C Cable (reverse) to the RS-232C port of the MultiSpeed.
2. Connect the other end of the RS-232C Cable to the serial port of your host computer.



3. Follow instructions for data transfer in your software manual.

The following wiring diagram for this cable is recommended:

MultiSpeed side	Host computer side
Female DB-25	Female DB-25



Other pins are not connected

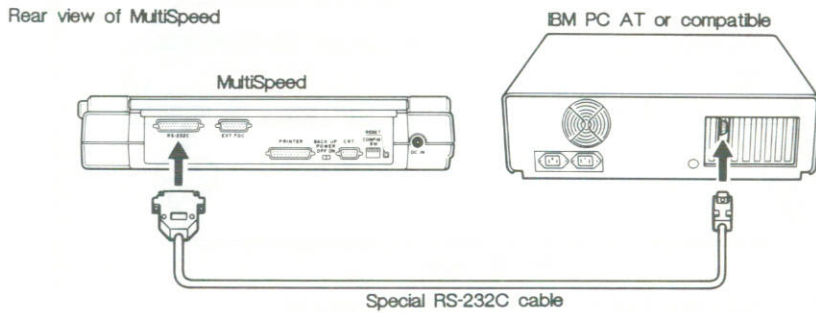


The IBM PC has no standard RS-232C connector and the RS-232C Cable PC-16-96 cannot be used.

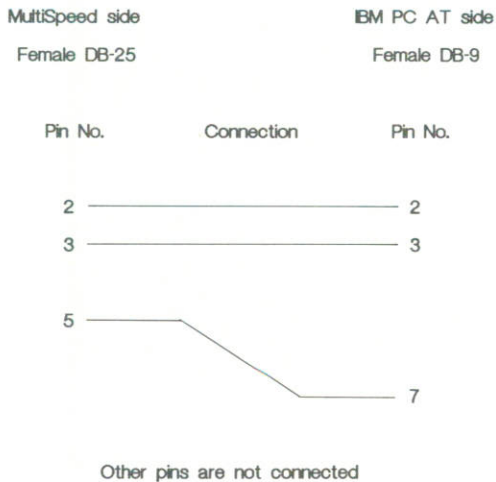
To connect the MultiSpeed to an IBM PC AT, the minimum hardware requirements are:

- A MultiSpeed
- An IBM PC AT
- An RS-232C card for the IBM PC AT
- A special RS-232C communication cable. This cable is not supplied by NEC Home Electronics but is available from computer dealers.

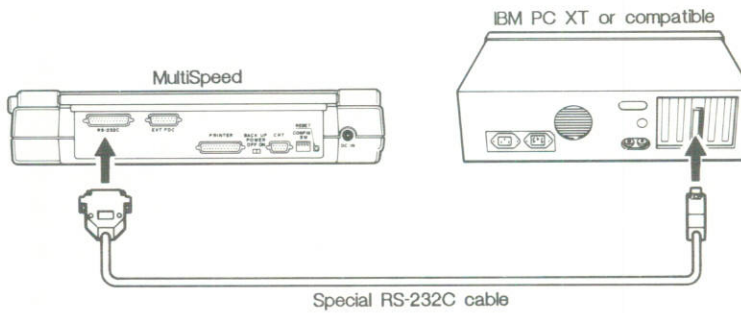
1. The next diagram shows how to connect the MultiSpeed to an IBM PC AT or IBM PC AT compatible computer.



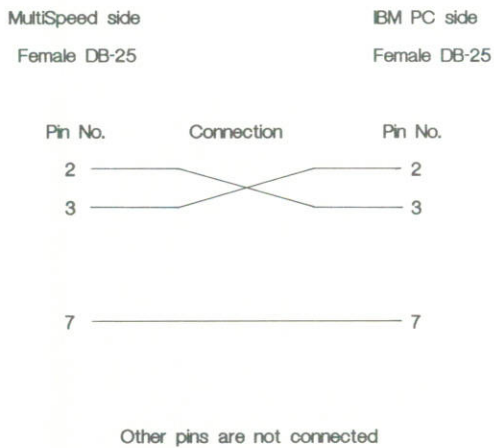
The following wiring diagram is recommended:



- The next diagram shows how to connect the MultiSpeed to an IBM PC, XT or an IBM PC, XT compatible computer.



The following wiring diagram is recommended:



CHAPTER 8 SETUP

8.1	WHAT IS SETUP?	134
8.2	STARTING THE SETUP PROGRAM	136
8.2.1	Stand-Alone Program	136
8.2.2	Pop Program	137
8.2.2.1	MENU Window	137
8.2.2.2	Direct Start	137
8.2.3	Stopping SETUP	138
8.3	SETUP SCREEN DISPLAY	139
8.3.1	Parameter List	139
8.3.2	The Message Area	140
8.3.2.1	Command Line	140
8.3.2.2	Help Line	140
8.3.2.3	Prompt Line	140
8.3.3	Selecting a Command	141
8.4	INTERACTIVE HELP SYSTEM	142
8.5	SETUP COMMANDS	144
8.5.1	Clock Command	144
8.5.2	Drive Command	145
8.5.3	Exit Command	147
8.5.4	Fdc Command	148
8.5.5	Pop Command	149
8.5.5.1	RAM Disk Review	150
8.5.5.2	Setting Work Size	151
8.5.6	Quit Command	154
8.5.7	Ramdisk Command	155
8.5.7.1	RAM Disk Review	156
8.5.7.2	Changing Ramdisk Parameters	157
8.5.8	Screen Command	160
8.5.8.1	Active	161
8.5.8.2	Color	161
8.5.8.3	Exit	163
8.5.8.4	Intensity	163
8.5.8.5	Palette	164

8.1 WHAT IS SETUP?

SETUP is a utility program that allows you to set or change operating system parameters for your MultiSpeed. These parameters determine the working environment in which your computer operates.

For example, one of these parameters allows you to specify the speed at which your computer runs. After you set this parameter and run another applications program, your computer runs that program at the speed you specified.

When you stop using your computer and turn the power off, it remembers all the current parameter settings. When you turn it on again to do some more work, the same operating system parameters remain in effect. You don't have to set the parameters each time you start working; you only need to use the SETUP program when you want to change the current setting.

SETUP includes eight commands which allow you to set particular operating parameters.

```
<SCREEN>
Color mode      Emulation      Contrast
Intensity mode Bold           Contrast

COMMAND: Clock Drive Exit Fdc Pop Quit Ramdisk Screen
Change CPU clock speed.
Select command or press first letter of command.
```

- Clock** Changes the speed of the CPU clock.
- Drive** Temporarily sets the computer for use as two external disk drives for another computer.
- Exit** Stops the SETUP program, resets the operating parameters and returns to the MS-DOS prompt.
- Fdc** Turns the FDC (Floppy Disk Controller) power save mode on and off.
- Pop** Allocates the size of the work area reserved for each built-in utility.
- Quit** Stops the SETUP program without resetting the operating parameters and returns to the MS-DOS prompt.
- Ramdisk** Sets the RAM disk size and parameters.
- Screen** Switches the MultiSpeed screen between LCD and external monitor.

The main SETUP screen displays a list of the main parameters and their current settings, as well as the eight commands in the message area at the bottom of the screen. You change a parameter by selecting the command which controls it.

Like the other built-in MultiSpeed programs, SETUP can be run from the POP UP key or from the MS-DOS prompt.

The SETUP program helps you to control the working environment in which your computer operates. You only need to change a parameter when the existing setting does not allow you to operate as you want.

SETUP includes an interactive HELP system. This provides you with on-screen assistance about the program, parameters, commands and how to use them. You can get the help you need, when you need it.

8.2 STARTING THE SETUP PROGRAM

The SETUP program can be started in two ways:

- As a stand-alone program from the MS-DOS prompt.
- As a pop program while another program is being run.

8.2.1 Stand-Alone Program

This method of starting may be useful if you only want to use your computer to set the operating parameters.

1. To start SETUP as a stand-alone program, type the program name SETUP at the MS-DOS prompt.

```
A>SETUP_
```

2. Press  and the SETUP program will be loaded into memory.

```
==== SETUP 1.00 ===== SETUP MAIN SCREEN =====
***** Size of free memory is 512K (the minimum is 128K) *****

<CLOCK SPEED>      High      Low
<FDC POWER SAVE>  On        Off

<POP>
Telcom           : 16K          Setup           : 1K
Notepad          : 16K
Filer            : 14K
Outliner         : 10K
Dialer           : 3K

<RAM DISK>
Buffer size      = 31K ( 28K Free)
Root directory entry = 64 Entries
Sector size      = 512 Bytes/Sector

<SCREEN>
Color mode       Emulation  Contrast
Intensity mode   Bold      Contrast

COMMAND: Clock Drive Exit Fdc Pop Quit Ramdisk Screen
Change CPU clock speed.
Select command or press first letter of command.
```



8.2.2 Pop Program

This method of starting is useful if you want to change a particular parameter while you are running another applications program. You can start SETUP from the POP UP key in either of two ways:

- Select it from the MENU window.
- Execute it directly.

When you run SETUP from the POP UP key, the operation of the other program will be suspended until you finish using SETUP.

8.2.2.1 MENU Window

1. Press  and the MENU window will be displayed on your screen.
2. Use the arrow keys to place the highlighted cursor over SETUP, then press .

(You can also press  or  to start SETUP from the MENU window.)


The SETUP program will be loaded into memory.

```

<SCREEN>
Color mode      Emulation  Contrast
Intensity mode  Bold      Contrast

COMMAND:Clock Drive Exit Fdc Pop Quit Ramdisk Screen
Change CPU clock speed.
Select command or press first letter of command.
  
```

8.2.2.2 Direct Start

Hold down  and press  (for SETUP).

```

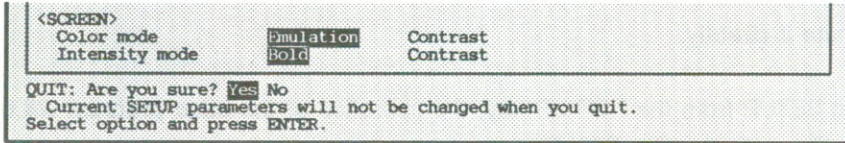
<SCREEN>
Color mode      Emulation  Contrast
Intensity mode  Bold      Contrast

COMMAND:Clock Drive Exit Fdc Pop Quit Ramdisk Screen
Change CPU clock speed.
Select command or press first letter of command.
  
```

8.2.3 Stopping SETUP

To leave SETUP and abandon your settings:

1. Select the Quit command with the highlighted cursor by pressing the space bar, then press , or just press . You will be asked to confirm your selection.

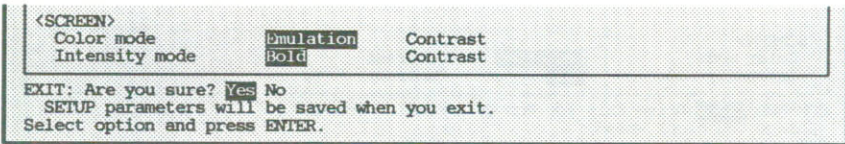


2. Press or to abandon.

If you change your mind and want to return to the SETUP command line, press or .

To leave SETUP and save your settings:

1. Select the Exit command with the highlighted cursor by pressing the space bar, then press , or just press . You will be asked to confirm your selection.



2. Press or to save your settings and put them into effect.

If you change your mind and want to return to the SETUP command line, press or .

8.3 SETUP SCREEN DISPLAY

When you start SETUP, the SETUP main screen is displayed on your screen. There are two parts to the main screen:

- The list of operating parameters and their current settings.
- The message area at the bottom of the screen where the eight SETUP commands and messages are displayed

8.3.1 Parameter List

The possible settings for each parameter are displayed to the right of the parameter name. The current settings are highlighted.

```

      SETUP 1.00                      SETUP MAIN SCREEN
      ***** Size of free memory is 512K (the minimum is 128K) *****

<CLOCK SPEED>      High      Low
<FDC POWER SAVE>  On        Off

<POP>
Telcom             : 16K          Setup           : 1K
Notepad            : 16K
Filer              : 14K
Outliner           : 10K
Dialer             : 3K

<RAM DISK>
Buffer size        = 31K ( 28K Free)
Root directory entry = 64 Entries
Sector size        = 512 Bytes/Sector

<SCREEN>
Color mode         Emulation   Contrast
Intensity mode    Bold       Contrast

COMMAND:Clock Drive Exit Fdc Pop Quit Ramdisk Screen
Change CPU clock speed.
Select command or press first letter of command.

```

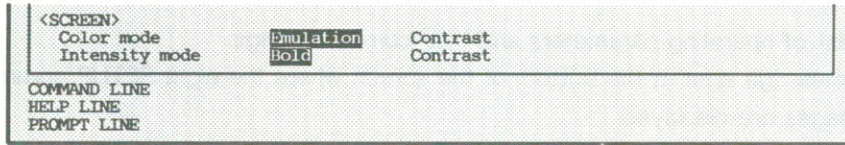
After you use a command to set a parameter, SETUP always returns to the SETUP main screen. You can then set another parameter, or save your setting(s).

The new settings will not be registered as the current operating system parameters until you exit the SETUP program with the Exit command, even though they are displayed on the parameter list.

You should always review the highlighted current settings before you exit and return to the MS-DOS prompt (or the suspended program, if you started SETUP from the POP UP key).

8.3.2 The Message Area

Your computer uses the message area at the bottom of the screen to display messages and prompts. There are three lines in the message area:



8.3.2.1 Command Line

The Command line displays the names of the eight SETUP commands. One command is always highlighted. This is referred to as the current command.

1. Press to select the current command.
2. To change the current command, press the space bar to move the highlighted cursor to the right or press to move the highlighted cursor to the left.



You can select a command immediately and display the next choice of options by typing the initial character of the command (press for "Clock", for example). With the space bar selection, however, you have the advantage of seeing the one line reminders (help) displayed in the next line below.

8.3.2.2 Help Line

The Help line displays a one-line reminder of what the current command does. If you move the highlighted cursor to change the current command, the Help message will change to give an explanation about the new current command.

8.3.2.3 Prompt Line

The Prompt line tells you how to execute the current command or option.

8.3.3 Selecting a Command

You can select a command from the SETUP main screen in either of two ways:

- Press the key of the first letter of the command name. For example, press to execute the Pop command.
- Place the highlighted cursor over the command name by pressing the space bar to make it the current command and press .



Although the second method is a little slower than the first, when you place the highlighted cursor over the command name, a short explanation of that command is displayed on the Help line in the message area.

8.4 INTERACTIVE HELP SYSTEM

The interactive HELP system is designed to give you the information and assistance you need to use SETUP. Press **[Help]** on your keyboard and information about your current operation will be displayed in the HELP window.

SETUP provides a short explanation of the current command or option on the Help line of the message area. This help is "context-sensitive" because the help it provides depends on what you are doing when you press **[Help]**.

When the SETUP main screen is displayed and you press **[Help]**, the information you get gives a general explanation about the program.

After you select a command from the SETUP main screen, the parameters and options you can set with that command are displayed. If you press **[Help]** at this point, the information you get is specifically about the current command.

Some of the commands require you to select one of several options from that command. Once you do that, you can press **[Help]** again to get information specifically about the current option. The interactive HELP system gives you help at every step of the program.

When you press **[Help]**, the HELP window will be displayed on your screen. When the HELP window is displayed, the operation of SETUP is suspended until you have read the information in the HELP window.

Here's an example of the HELP window. It shows the first page of the Help message displayed when you press **[Help]** at the SETUP main screen.

```
----- SETUP 1.00 ----- SETUP MAIN SCREEN -----
***** Size ----- SETUP 1.0 / HELP ----- 1 of 2 -----
<CLOCK SPEED> SETUP
<FDC POWER> The SETUP program allows you to set or change various
              system parameters for the MultiSpeed.
<POP>
  Telcom
  Notepad
  Filer
  Outliner
  Dialer
<RAM DISK>
  Buffer si
  Root dire
  Sector si
  The Main Screen displays a list of all the parameters and
  their current settings, as well as the eight commands.
  You change a parameter by selecting the command which
  controls it.
<SCREEN>
  Color mo
  Intensit
HELP: Next Prev Resume
Resume session
Select command or press command letter.
```

In some cases, there is more help information available than can be displayed in the HELP window at one time.

On the message area you will see three options: Next, Prev and Resume.

The current option is highlighted.

- Next** Displays the next page of help information in the HELP window.
- Prev** Displays the previous page of information.
- Resume** Removes the HELP window from the screen.

Press the space bar or to select the option you want and then press .

You can also select an option directly by pressing the key of the first letter of the option name. For example, press to display the Next page. Instead of the Resume option, you can also press .

Once you have read the information you need in the Help window, select "Resume" or press to clear the HELP window from the screen. SETUP will continue on from the point where it was suspended to give you HELP.

8.5 SETUP COMMANDS

8.5.1 Clock Command

The Clock command allows you to set the speed of the MultiSpeed's CPU (Central Processing Unit) clock.

The speed at which you set the CPU clock determines how quickly the computer runs applications programs and processes your data. There are two settings for this clock:

High means an operating speed of 9.54 MHz (megahertz).

Low means an operating speed of 4.77 MHz.



The IBM PC-XT computer runs at 4.77 MHz.

There are some applications programs which only run correctly at the "Low" setting, so you should change the setting to "Low" for such applications.



The fourth configuration switch from the left, under CONFIG SW on the rear of the MultiSpeed, should always be down. This is the high setting (9.54 MHz). If you move this switch up, the MultiSpeed CPU clock will always run at the low setting (4.77 MHz), even when the current setting is "High".

As long as this switch is down, you can change the clock speed with SETUP (set it to low or high). However, if the switch is moved up, you cannot change the clock speed from SETUP (the CPU clock will always run at 4.77 MHz. See Appendix I).


1. To start the Clock command, select "Clock" with the highlighted cursor by pressing the space bar then press . You can also start it by just pressing .

After you select the Clock command from the SETUP main screen, the two setting options are displayed on the system lines.


```
<SCREEN>
Color mode      Emulation  Contrast
Intensity mode  Bold       Contrast

CPU clock speed: High Low
Select clock speed and press ENTER.
```

The current setting is highlighted. Press  to display help information about this command.

2. Press the space bar once and the highlighted cursor will move to cover the other option. Press the space bar again and the highlighted cursor will return to the original setting.
3. Press  to enter the new setting into the parameter list on the main SETUP screen.

Press  if you change your mind and want to cancel the new setting.

After you press , the SETUP main screen containing the operating parameter list will be displayed on your screen.

The new clock setting will be highlighted in reverse field.

When you exit from the SETUP program, the new clock setting becomes the current setting and your computer will operate at that speed.

8.5.2 Drive Command

The Drive command temporarily sets the two MultiSpeed disk drives A and B in your computer for use with an IBM PC or IBM PC/XT. This allows you to link the two machines together and exchange files and programs between the two machines. This feature may be useful in several ways:

- It allows you to quickly transfer data files to and from your host computer and the MultiSpeed.
- You can run programs from the host computer and access files on diskettes in the MultiSpeed's disk drives.
- You can download your programs and data files to the MultiSpeed's 3.5-inch diskettes and carry them with your MultiSpeed.

Using the Drive command is only one part of the the procedure to get the MultiSpeed's drives ready for use as external drives. The complete procedure includes:

- Determining what version of MS-DOS or PC-DOS you are using.
- If you are using MS-DOS or PC-DOS Version 3.2 you have to make a CONFIG.SYS file on the system diskette of the host computer that contains the DEVICE specifications:

```
DEVICE = DRIVER.SYS /D:02
```

```
DEVICE = DRIVER.SYS /D:03
```

- If you are using MS-DOS/PC-DOS Version 3.1 or lower, then you have to make a CONFIG.SYS file on the system diskette of the host computer that contains the DEVICE specification:

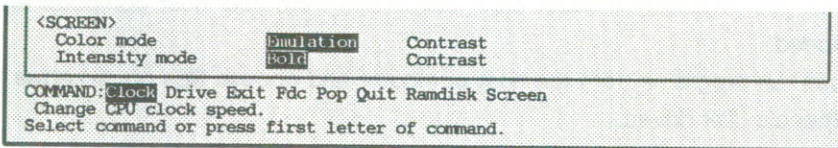
```
DEVICE = EXTERN.SYS
```

- You will also need to copy the EXTERN.SYS file from the utility diskette in the External Transfer Cable Kit (PC-16-97) to your host computer system disk.



The Drive command is only part of other important procedures and preparations you must complete before you can use the MultiSpeed in the external drive mode. These procedures are described, along with a list of required equipment, in Section 7.4 of this guide.

Here is a summary of how to set the MultiSpeed external drive mode.

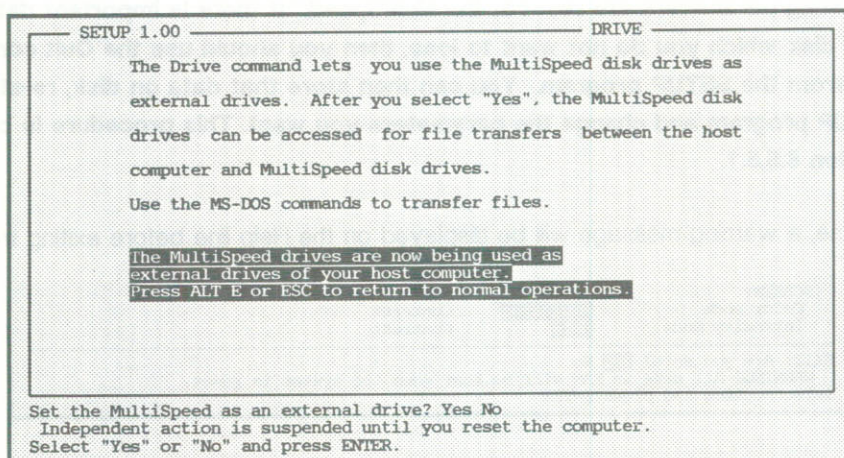


1. Select the Drive command by pressing the space bar and press or just press .
2. Press to get information about the Drive command, then press .

3. Press to set your machine for use as external disk drives.

You can cancel at this step by pressing or .

After you select "Yes" to set your machine, the highlighted cursor will disappear from the screen you will see this message:

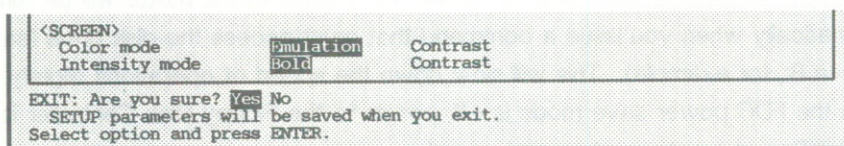


When the MultiSpeed is in the external drive command mode, all commands are issued from the host computer. The MultiSpeed keyboard is disabled until you press or to return to normal keyboard operation.

8.5.3 Exit Command

Use the Exit command to exit from the SETUP program, reset the SETUP operating parameters and return to the MS-DOS command level. The Exit command is quite different from the Quit command which does not reset the SETUP parameters when it exits from the SETUP program.

1. To exit SETUP and set the parameters, select the Exit command with the highlighted cursor then press , or just press . The MultiSpeed will ask you to confirm your decision:



2. Press to get help from the HELP window if you need it.

3. Press Y to exit from SETUP and reset the operating parameters.
4. Press N to continue with the SETUP program if you want to make more settings.



When you make changes to the Ramdisk parameter or the size of the work area reserved for built-in programs, all existing data in the RAM will be deleted as the operating parameters are reset in the MultiSpeed. If there is important data on the RAM disk which you do not want to lose, then you should use the Quit command to exit from the SETUP program. You can then store that data on disk, re-start the SETUP program and change the parameters you want. This procedure is covered in Section 8.5.5.1.

In this case, a warning message will be displayed on the Help line before exiting from SETUP.

```
<SCREEN>
Color mode      Emulation      Contrast
Intensity mode  Bold           Contrast

EXIT: Are you sure? Yes No
WARNING! All data in RAM will be lost when the system is reset.
Select option and press ENTER.
```

5. Press Y to exit from SETUP and reset the operating parameters.
6. Press N to continue with the SETUP program.

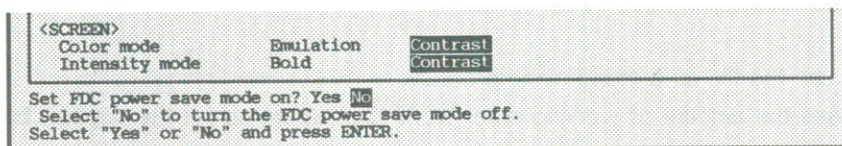
8.5.4 Fdc Command

The abbreviation "Fdc" (or "FDC") stands for Floppy Disk Controller. It's a device in the MultiSpeed that controls the rotation of the disk drives. The Fdc command turns the power save mode off and on. This is a feature you can use when you need to conserve battery power.

This is what the FDC power save mode does for you:

- When the FDC power save mode is on, power to the motor that controls the rotation of the floppy diskettes in the drives is turned off. Power to the motor will be turned on automatically when you issue a command that must access the disk drive (saving a file to drive B; for example). This will slow down the speed of operations slightly.
- When the FDC power save mode is off, power to the Floppy Disk Controller is on and the MultiSpeed functions at normal speed.

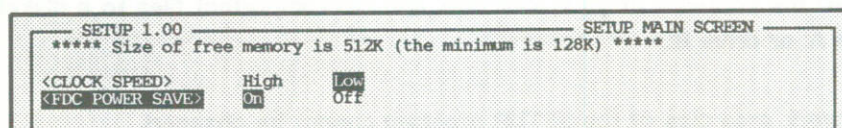
1. Highlight the Fdc command by pressing the space bar then press , or you can just press . Two options will be displayed on in the message area:



The current setting will be highlighted.

2. Press to turn on the power save mode, or press to turn it off. The main SETUP screen will indicate your setting.

The setting you choose will be displayed on the main screen:



8.5.5 Pop Command

This command allows you to set the amount of working area in memory allocated for use with each of the five built-in application programs. The built-in programs are assigned a portion of memory (work area) to store and process your data when they are working.

When you run an application program as a stand-alone program directly from the MS-DOS prompt, the program and data file are loaded into the user area in memory. This is a much larger area that the work size assigned to the program when it is started by using .

A stand-alone program cannot use this working area and so is not affected by the amount of area you set with this command. As you work with a program, the file which holds the data you use with that program gets larger as you add data.

For example, the DIALER program creates a data file called DIALER.DAT to hold your telephone directory. Over time, as you add more entries into your directory, more working area in memory is needed to store and process your file. As your file grows in size, the 100% free notation at the top of your program screen will decrease. To continue with the DIALER example, if you are going to need a large file for your phone directory, you may have to change the assigned work size for the DIALER program.

A large DIALER.DAT file can be loaded into memory of the stand-alone program, but it may be too large to be loaded into the work area of the popped (started from the POP UP key) program. In this case, you have these options:

- Only use the file as a stand-alone program.
- Increase the amount of working area (work size) allocated for the popped built-in program.

When you change the reserved work size for program, it re-draws the boundary lines of the working area, making the allocated areas bigger or smaller, according to your specifications.




Changing the work size for even one program erases the MultiSpeed's memory, including the RAM disk. Before you change the work size for a built-in program, review the contents of your RAM disk and save important files to a diskette in drive A: or drive B:



The work area size of the SETUP program cannot be changed.

8.5.5.1 RAM Disk Review

1. Return to the MS-DOS prompt line with the Quit command.
2. Review the contents of the RAM disk with the MS-DOS DIR comamnd. Type **DIR C:** then press .

```
A>DIR C:
Volume in drive C is RAM disk
Directory of C:\

NOTEUSRS  DIC      10   10-31-86   2:42a
DIALER    BAK      12   10-31-86   2:35a
DIALER    DAT      15   10-31-86   2:38a
          3 File(s)      28160 bytes free
```

This shows two important files that are worth saving: The NOTEUSRS.DIC (NOTEPAD user dictionary) file and the DIALER.DAT (DIALER phone directory) file.

- Use the MS-DOS COPY command to save files. To save them all with one command execution, type **COPY C:*. * B:** to save the files to drive B; or type **COPY C:*. * A:** to save them to drive A:

```
A>COPY C:*. * B:_
```

- Press . The files are copied to the designated drive. Now you are ready to change the work size of the built-in programs.

8.5.5.2 Setting Work Size

When you select the Pop command from the SETUP main screen, the current working area allocations for each built-in program will be displayed on your screen.

This is a list of the default settings for each program:

TELCOM	16K
NOTEPAD	16K
FILER	14K
OUTLINER	10K
DIALER	3K
SETUP	1K

NOTE

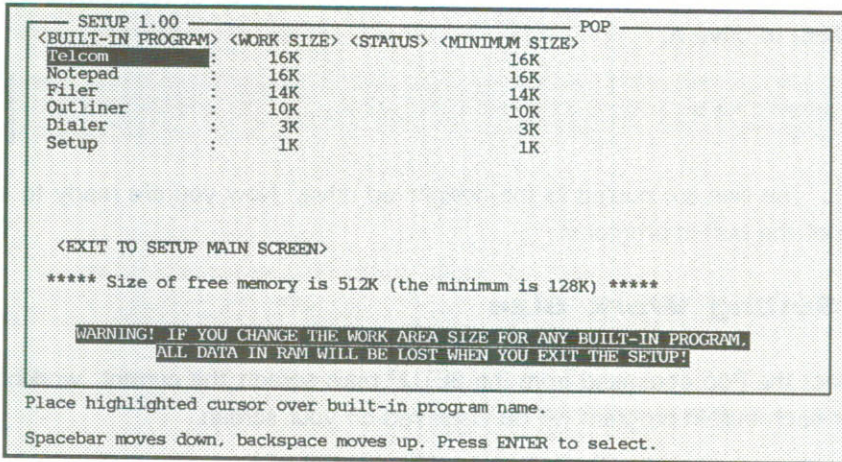
You cannot change the work size of SETUP.

```
<SCREEN>
Color mode      Emulation      Contrast
Intensity mode  Bold           Contrast

COMMAND: Clock Drive Exit Fdc Pop Quit Ramdisk Screen
Change CPU clock speed.
Select command or press first letter of command.
```

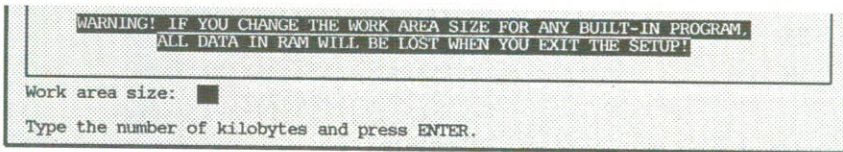
- To start the Pop command, move the highlighted cursor to "Pop" then press , or just press .
- Press to display more information about this command then press when you are finished. The TELCOM program will be highlighted as the first selection.

7. Use the space bar, or keys to move the highlighted cursor.



8. When the highlighted cursor is on the program name you want, press .

SETUP prompts you to specify how much working area you want to allocate to that built-in program.



9. Now it is time to make your settings.

To change the work size, just type a number then press . Don't include the letter "K" as part of the number. If you do, the MultiSpeed will refuse the entry and wait for you to try again.

After you type a number to change the work size, the "First value =" notation appears on the right side of the screen.

If you type a zero, SETUP will accept this and assume that you want to disable that program. When a program is disabled, it cannot be loaded and executed from the POP UP key. After you type a zero to disable a program, the "Disable" notation appears in the <STATUS> column.

If you type a number smaller than the minimum allowed settings listed in the <MINIMUM SIZE> column, SETUP will automatically upgrade the setting to the minimum size for that program.

Maximum settings are limited by the amount of free memory left over after you type your setting. The MultiSpeed will calculate this for you. If the setting is too large, the MultiSpeed will tell you:

**Invalid setting! Setting results in
free memory size of less than 128K.**

Below the list of program names, you will see a message telling you how much free memory is available.

```
<EXIT TO SETUP MAIN SCREEN>
***** Size of free memory is 512K (the minimum is 128K) *****
```

The first number (in this example, "512K") will change every time you type a new work size setting for a program.

10. When you have set all the work size allocations that you want, exit to the SETUP main screen to register the new settings in the operating parameter list.

To do this, press the space bar or to move the highlighted cursor to:

<EXIT TO SETUP MAIN SCREEN>

11. Press or .

SETUP will exit from the Pop command and display the SETUP main screen again. The current settings will be highlighted.

You can now select another SETUP command or exit SETUP.

12. Before you exit SETUP, review the settings on the screen. Up to this point you have done nothing to memory. Changes in work size will take effect only after you execute the Exit command.

Press to start the Exit command.

13. Press to execute your changes.

After you press the MultiSpeed initializes memory and re-formats the the RAM disk. When this is finished, you'll see the prompt to set the date and time. Just press at each prompt to display the MS-DOS prompt.

```
NEC MULTISPEED
RAM Test 607K
Installing RAM DISK Driver
    Buffer size: 31 KB
    Sector size: 512 Bytes/Sector
    Directory entries: 64
Formatting the RAM disk .....
Installing built-in software
Current date is Tue 10-28-1986
Enter new date (mm-dd-yy):
Current time is 12:32:02.94
Enter new time:
Microsoft(R) MS-DOS(R) Version 3.20
(C)Copyright Microsoft Corp 1981-1986
A>_
```

8.5.6 Quit Command

The Quit command allows you to exit from the SETUP program, abandoning any new parameter settings you made during the current session. You will return to the MS-DOS prompt.

The Quit command ignores settings you have changed. This is quite different from the Exit command, which automatically registers any changes you made to the operating system parameters.

You can pop (start from the POP UP key) the SETUP program to review your current settings, then use the Quit command to return to processing without altering your SETUP parameter settings.

1. To quit the SETUP screen, move the highlighted cursor to "Quit" then press , or just press .

```
<SCREEN>
Color mode      Emulation      Contrast
Intensity mode Bold           Contrast
QUIT: Are you sure? Yes No
Current SETUP parameters will not be changed when you quit.
Select option and press ENTER.
```

2. Select "Yes" or press Y to quit SETUP without changing the current parameters.

If you select "Yes", the system will return to the MS-DOS prompt (if you started SETUP as stand-alone) or to your previous screen display (if you pop SETUP).

Select "No", press N or Esc to continue with the SETUP program.

If you select "No", the SETUP main screen will be displayed and you can select another command from the SETUP main screen.

8.5.7 Ramdisk Command

The Ramdisk command lets you specify three RAM disk operating parameters: the buffer size, number of root directory entries and sector size. This helps you use the RAM disk more efficiently. You can also use this command to disable the RAM disk (set it to zero).

The RAM disk is a simulated disk drive. It is actually a portion of the MultiSpeed's memory that can be used like a diskette to store files. The following characteristics apply to your RAM disk (drive C:):

- The RAM disk is fast since it operates at the speed of the MultiSpeed's memory.
- You can specify the amount of memory to be used by the RAM disk.
- The contents of the RAM disk are not lost when the MultiSpeed POWER switch is turned off.
- The MultiSpeed is set with a RAM disk in memory where it will remain unless you set it to zero (disable it).



Changing the parameters of the RAM disk initializes memory and re-formats the RAM disk. Before you change the RAM disk parameters and exit SETUP, be sure there is nothing in memory that you want to save.

8.5.7.1 RAM Disk Review

1. Return to the MS-DOS prompt line with the Quit command.
2. Review the contents of the RAM disk with the MS-DOS DIR command. Type **DIR C:** then press .

```
A>DIR C:
Volume in drive C is RAM disk
Directory of C:\

NOTEUSRS  DIC      10    1-01-80   2:42a
DIALER    BAK      12    1-01-80   2:35a
DIALER    DAT      15    1-01-80   2:38a
          3 File(s)      28160 bytes free
```

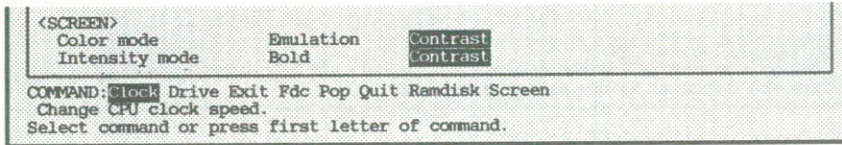
This shows two important files that are worth saving: The NOTEUSRS.DIC (NOTEPAD user dictionary) file and the DIALER.DAT (DIALER phone directory) file.

3. Use the MS-DOS COPY command to save files. To save them all with one command execution, type **COPY C:*. * B:** to save the files to drive B:, or type **COPY C:*. * A:** to save them to drive A:.

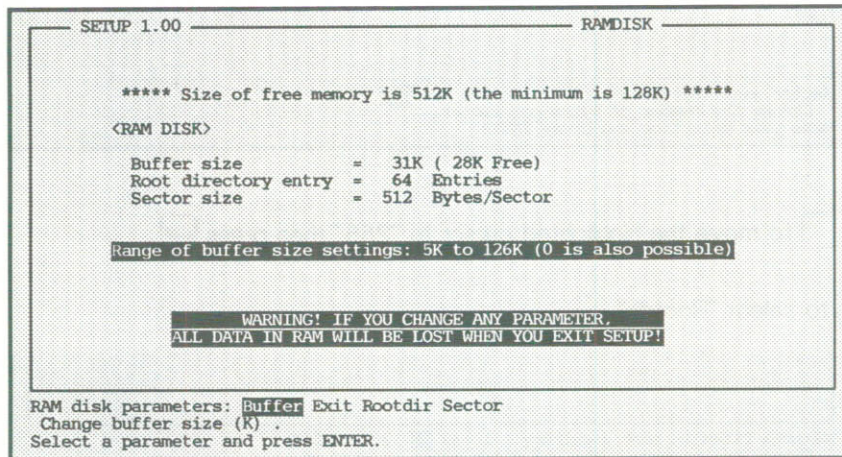
```
A>COPY C:*. * B:_
```

4. Press . The files are copied to the designated drive. Now you are ready to change the RAM disk parameters.

8.5.7.2 Changing Ramdisk Parameters



1. At the SETUP command line, move the highlighted cursor to "Ramdisk" with the space bar and press or just press .



2. There are three settings you can change: Buffer, Rootdir and Sector.

- Buffer** Specifies the size of the RAM disk. Settings between 5 and 126K are possible. To disable the RAM disk, set it to zero.
- Rootdir** This the number of directory entries (number of files) that the RAM disk can contain.
- Sector** This is the sector size in bytes. Allowed settings are:

64, 128, 256, 512.

If you are storing small files, you may want to specify a small sector size to save space.

The following procedure shows you how to set a 126K RAM disk with 256-byte sectors and 16 directory entries.

3. Press **B** to select "Buffer".

```
Buffer size (K) : █
Change the size of the RAM disk buffer.
Type the number of kilobytes and press ENTER.
```

4. Type 126 (the maximum setting) then press **↵**.

5. Press **S** to select "Sector".

```
Sector size (bytes/sector) : 64 128 256 512
Change the number of bytes per sector.
Make your selection and press ENTER.
```

6. Press **←** to move the highlighted cursor to "256" then press **↵**.

7. Press **R** to select "Rootdir".

```
Maximum files in root directory: 16 32 64 128 256 512
Change the maximum number of files to be entered in root directory.
Make your selection and press ENTER.
```

8. Press the space bar to move the highlighted cursor to "16" then press **↵**.

```
----- SETUP 1.0 ----- RAMDISK -----

***** Size of free memory is 512K (the minimum is 128K) *****

<RAM DISK>
Buffer size      = 126K ( 28K Free)   First value = 31
Root directory entry = 16 Entries       First value = 64
Sector size      = 256 Bytes/Sector  First value = 512

Range of buffer size settings: 5K to 126K (0 is also possible)

WARNING! IF YOU CHANGE ANY PARAMETER,
ALL DATA IN RAM WILL BE LOST WHEN YOU EXIT SETUP!

RAM disk parameters: Buffer Exit Rootdir Sector
Change buffer size (K) .
Select a parameter and press ENTER.
```



9. Press **E** to exit RAM disk parameters line.

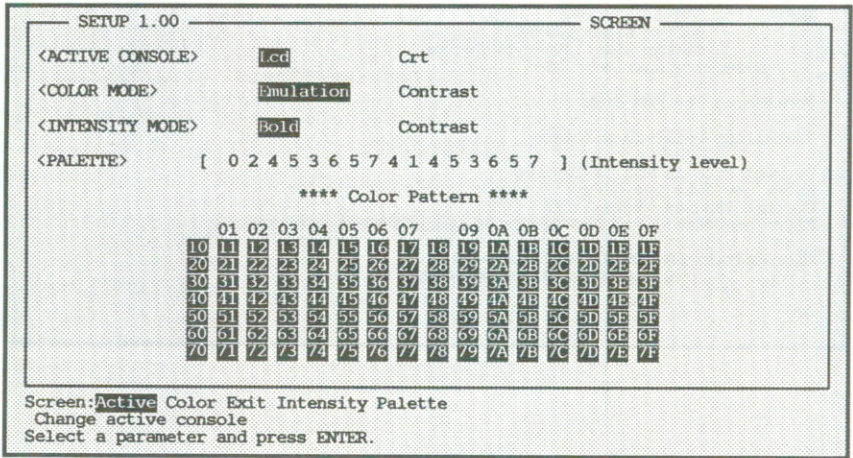
10. Review your settings displayed in the main SETUP screen, then press to exit.
11. Press . The MultiSpeed is automatically reset. When you see the MS-DOS date prompt, press twice. Your screen should look like the one below.

```
NEC MULTISPEED
RAM Test 512K
Installing RAM disk Driver
  Buffer size: 126 KB
  Sector size: 256 Byte/Sector
  Directory entries: 16
Formatting the RAM disk .....
Installing built-in software
Current date is Mon 12-15-1986
Enter new date (mm-dd-yy):
Current time is 9:19:11.73
Enter new time:
Microsoft(R) MS-DOS(R) Version 3.20
(C)Copyright Microsoft Corp 1981-1986
A>_
```

8.5.8 Screen Command

The Screen command allows you to set the type of console to be used with your computer and the color, contrast and palette parameters for the screen display.

Press the space bar to move the highlighted cursor to "Screen" then press , or just press .

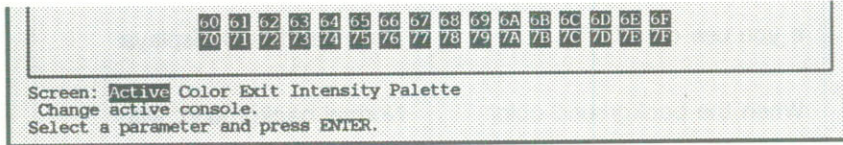


- Active** This is the setting you need to change if you are going to connect the MultiSpeed to a video monitor.
- Color** Sets how characters displayed in color on a CRT are output to the MultiSpeed LCD.
- Exit** Exits to the main SETUP screen.
- Intensity** Sets how characters displayed on a CRT (set for varying levels of intensity) will be displayed on the MultiSpeed LCD.
- Palette** Sets the contrast level of each color palette. The palette parameter is only valid when the Color parameter is set to "Contrast".

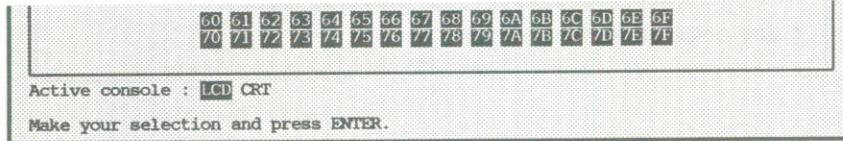


Color, Intensity and Palette parameters are effective only for the MultiSpeed LCD. Do not try to use these parameters when the CRT is active.

8.5.8.1 Active



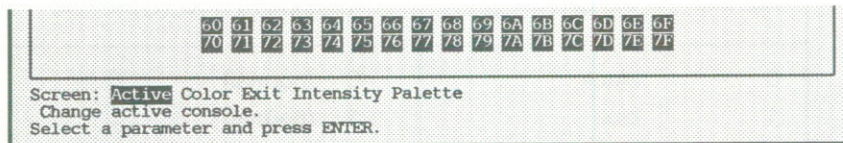
The "Active" option is already highlighted, so just press .



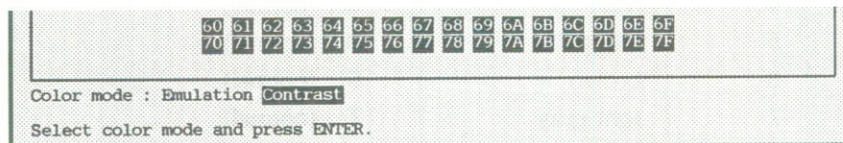
This is the setting you need to change if you are going to connect the MultiSpeed to a video monitor. Use of this option and connection of the MultiSpeed to a video monitor are covered in Section 7.3.

The display screen on your computer is an LCD console, so this is the default setting for this parameter. Change the active console when you want to connect your computer to another computer or console.

8.5.8.2 Color



Press to select "Color".



The Color parameter sets how colors displayed on a CRT are output to the MultiSpeed LCD. The MultiSpeed LCD cannot display color, but it can be set to display eight levels of darkness.

If you select "Emulation", the MultiSpeed LCD will display characters in this way:

If you use on a CRT:	MultiSpeed LCD displays:
When the background color is black:	Normal background, with normal characters (darkest)
When the background color is any color other than black:	Reverse display

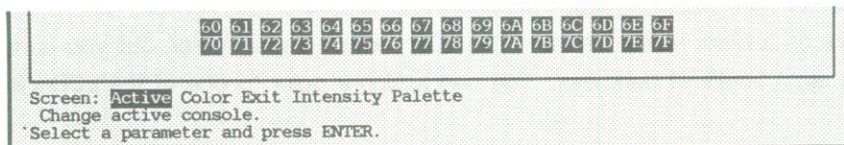
In the "Emulation" mode, the characters of the palette number (see the table below) 01 to 07 will be displayed in normal typeface, and palette numbers 09 to 0F will be displayed in boldface.

If you select "Contrast", the MultiSpeed displays eight levels of darkness (7 the darkest, 0 the lightest) and two typefaces. You can change the default settings using the Palette parameter.

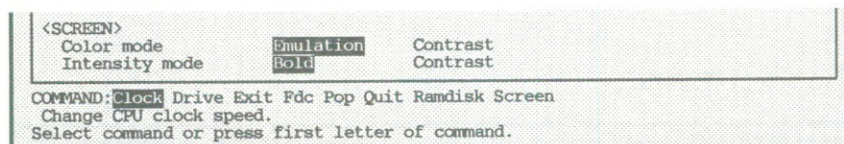
Palette Number	Color on the CRT	Darkness Level on MultiSpeed LCD (typeface)
0	black	0 (normal)
1	blue	1 (normal)
2	green	4 (normal)
3	cyan	5 (normal)
4	red	3 (normal)
5	magenta	6 (normal)
6	brown	5 (normal)
7	light gray	7 (normal)
8	dark gray	0 (bold)
9	light blue	1 (bold)
A	light green	4 (bold)
B	light cyan	5 (bold)
C	light red	3 (bold)
D	light magenta	6 (bold)
E	light yellow	5 (bold)
F	white	7 (bold)

After you select "Emulation" or "Contrast" and press , you can see how the characters will be displayed by referring each two-digit number in the Color Pattern table on the screen. The left digit number indicates the background color and the right digit number indicates the foreground color.

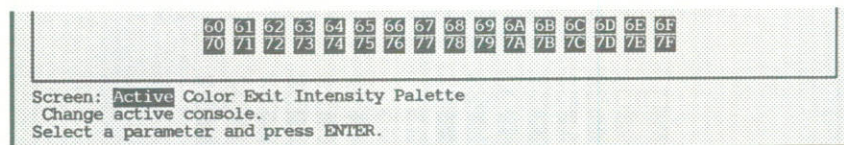
8.5.8.3 Exit



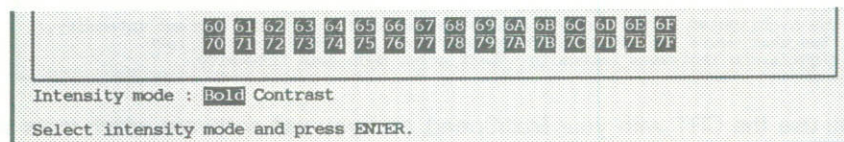
Press to exit to the main SETUP screen.



8.5.8.4 Intensity



Press to select "Intensity".

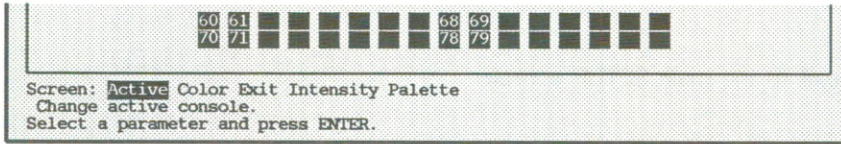


You can choose how to display the characters on the LCD, if they are displayed in the intensity mode on the CRT. When Intensity is set to "Bold", characters which are to be emphasized on the CRT will appear in bold on the LCD. When the intensity mode is set to "Contrast", characters emphasized on the CRT will appear normal on the LCD.

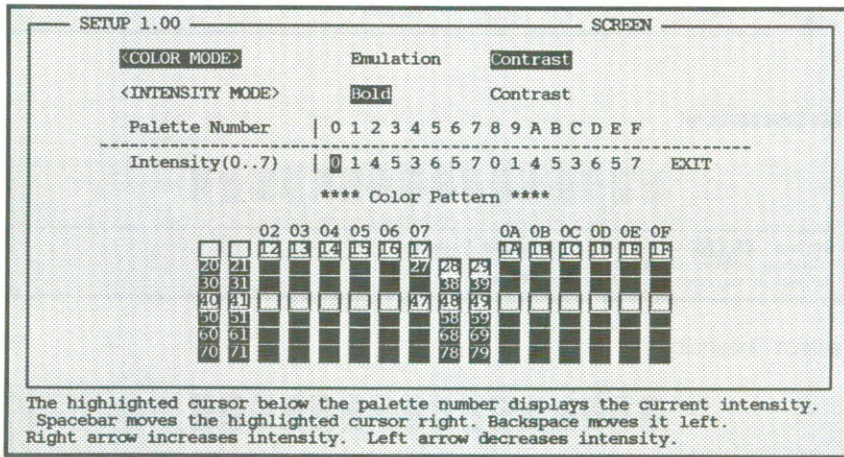
8.5.8.5 Palette

The Palette parameter can be set only when the Active console is set to "LCD" and the Color mode parameter is set to "Contrast". This lets you adjust the darkness of the characters on your LCD.

Adjust the Palette parameter settings when you use software that normally displays several different colors on a color video display. The LCD cannot display color, but you can adjust its characters to eight levels of darkness. You can assign a color to one of the LCD's levels of darkness.



1. Press to select "Palette".



Should you use the CRT with your MultiSpeed, and you use software which uses several colors, you will see up to 16 different colors on the CRT. The palette numbers 0 through 9, and A through F, are assigned to each color. You set the darkness levels to according to each palette number.

The numbers 0 to 7 in the Intensity line indicate the darkness levels assigned for each color palette. The 0 setting is the lightest, the 7 is the darkest.

The next table shows the actual colors for each palette and the default darkness of the characters displayed on the MultiSpeed LCD.

Palette number	Color on CRT	Darkness level on MultiSpeed LCD (Typeface)
0	black	0 (normal)
1	blue	1 (normal)
2	green	4 (normal)
3	cyan	5 (normal)
4	red	3 (normal)
5	magenta	6 (normal)
6	brown	5 (normal)
7	light gray	7 (normal)
8	dark gray	0 (bold)
9	light blue	1 (bold)
A	light green	4 (bold)
B	light cyan	5 (bold)
C	light red	3 (bold)
D	light magenta	6 (bold)
E	light yellow	5 (bold)
F	white	7 (bold)

- Assume that you have software which uses green and red on a color display, and you want to use this software on the MultiSpeed and its LCD. In the table above, the darkness assigned to red and green is level 3 and 4, so you will find that these two levels of darkness are not easy to distinguish on the LCD. It is necessary, then, to change the darkness levels assigned to palette number 4 (red on the CRT) and 2 (green on the CRT).
- To change the darkness levels, move the highlighted cursor to the number below the corresponding palette number with the space bar and . In this case, move it to the palette number 2 (green).

Palette Number	| 0 1 2 3 4 5 6 7 8 9 A B C D E F
Intensity(0..7)	| 0 1 4 5 3 6 5 7 0 1 4 5 3 6 5 7 EXIT

- To adjust the screen level of the darkness, press to increase or to decrease the darkness level. You can also use the number keys, 0 through 7.

You can see how the combination of green and red are displayed on the CRT by watching the color pattern table on the screen. The fifth from the left, on the third line (number "24"), tells you how green characters appear on a red background. The third from the left on the fifth line (number "42"), tells you how the red characters on the green background are displayed on the LCD.

- When you finish adjusting the darkness level with reference to the color pattern table, press the space bar or to move the highlighted cursor to "EXIT".

Palette Number	|	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
Intensity(0..7)	|	0	1	7	5	0	6	5	7	0	1	4	5	3	6	5	7	EXIT

- Press to exit palette and return to the Screen command menu.
- To exit the Palette screen, press .



<SCREEN>	Color mode	Emulation	Contrast
Intensity mode	Bold	Contrast	
COMMAND: C lock Drive Exit Fdc Pop Quit Randisk Screen			
Change CPU clock speed.			
Select command or press first letter of command.			

- Press to exit, then press to confirm your settings, then your parameters are set.

APPENDICES

APPENDIX A: GENERAL HARDWARE SPECIFICATIONS	168
APPENDIX B: ELECTRICAL POWER SPECIFICATIONS	169
APPENDIX C: MULTISPEED 300/1200 BPS MODEM	170
APPENDIX D: I/O INTERFACES	172
APPENDIX E: MEMORY MAP	178
APPENDIX F: MULTISPEED CHARACTER CODES	179
APPENDIX G: TELCOM VT100 CHARACTER SETS	
G.1 U.S. Character Set	180
G.2 U.K. Character Set	181
G.3 Special and Line Drawing Character Set	182
APPENDIX H: MULTISPEED COMPATIBLE PERIPHERALS	183
APPENDIX I: CONFIG SW SETTINGS	184
APPENDIX J: RAM640R.COM AND COLD.COM FILES	185
APPENDIX K: CONNECTION OF PERIPHERALS	188

APPENDIX A: GENERAL HARDWARE SPECIFICATIONS

Dimensions	346 mm (W) x 315 mm (D) x 78.5 mm (H) 13 11/16 inches (W) x 12 1/2 inches (D) x 3 1/4 inches (H)
Weight	approximately 11 lbs (5 kg)
CPU	μ PD70116D-10 Clock 9.54 MHz/4.77 MHz (Selectable)
ROM	Standard ROM 512K bytes Expansion ROM 2 ROM sockets for 256 K bits x 2 or 1M bits x 2
RAM	Main RAM 512K bytes Pseudo SRAM 128K bytes Static RAM Video RAM 16K Bytes Static RAM
Keyboard	85 keys includes: 10 function keys Special keys:  
LCD	Resolution 640 x 200 dots Display characters 80 characters per line x 25 lines Dimensions 290.5 x 151.0 mm Display area 230.4 x 120.0 mm Detachable
Disk Drives	Two 3.5 inch micro diskette drives (720K each)
Built-in Calendar	Back-up by internal NiCd battery

APPENDIX B: ELECTRICAL POWER SPECIFICATIONS

Battery

MultiSpeed NiCd Battery Pack PC-16-70

To be recharged for 8 hours when connected to AC Adapter

Lifespan 4 to 6 hours

Back-up Battery

NiCd Battery 3.6V 50mAH

Emergency back-up time limit is approximately one week under storage conditions without the NiCd Battery Pack.

Power Off

Manual power disconnected by the electrical power switch. Controllable by a POWER command in the MENU Power off configuration function.

Low Voltage Display LED

The LED will light up when the electrical power drops below a standard value.

Operating Conditions

During operation

Temperature 41^o to 95^oF (5^o to 35^oC)

Relative Humidity 20% to 80%

During Storage

Temperature -4^o to 122^oF (-20^o to 60^oC)

Humidity range 10% to 90%

MultiSpeed AC Adapter (PC-8671A-01)

Rated output 13.5V 1A

Input voltage AC 120V ± 10%

Frequency 60Hz

APPENDIX C: MULTISPEED 300/1200 BPS MODEM

Automatic Dialing

Pulse Dialing

Dial Speed	10 PPS
Pulse make	=39ms
Pulse break	=61ms
Minimum	>600ms

Touch-Tone Frequencies

Low Group (Hz)				
697	1	2	3	
770	4	5	6	
852	7	8	9	
941	*	0	#	
	1209	1336	1477	High Group (Hz)

Modem Specifications

- Line Interface: 2-wire
- Duplex Select: Full or half
- Transmit Level: -10dBm (typical)
- Carrier Fail Disconnect: 700 ms (typical)
- Recommended Connector: RJ11, RJ12 or RJ13

Low Speed Operation

Data Format: Serial, Binary, asynchronous
 Data Rate: 110/300 BPS
 Modulation: Frequency shift-keying (FSK)
 Frequency: Low Speed Carrier Frequencies (in Hz)

		1	0
ORIGINATE	Transmit	1270	1070
	Receive	2225	2025
ANSWER	Transmit	2225	2025
	Receive	1270	1070

Receive Level: -43 dBm (typical)

High Speed Operation

Data Format: Serial, Binary, Asynchronous
 Modulation: Phase shift-keying (PSK)
 Equalization Type: Fixed Compromise
 Frequency: High Speed Carrier Frequencies (in Hz)

ORIGINATE	Transmit	1200
	Receive	2400
ANSWER	Transmit	2400
	Receive	1200

Scramble Polynomial: $X = 1 + X^{-14} + X^{-17}$
 Received Frequency Tolerance: $\pm 7.0\text{Hz}$

Conditions:

	Ambient Temperature	Relative Humidity	Maximum wet-bulb temperature
OPERATION:	32 ^o to 95 ^o F	20 to 80%	No condensation at 77 F
TRANSPORTATION:	-4 ^o to 122 ^o F	10 to 90%	
STORAGE:	-4 ^o to 122 ^o F	10 to 90%	

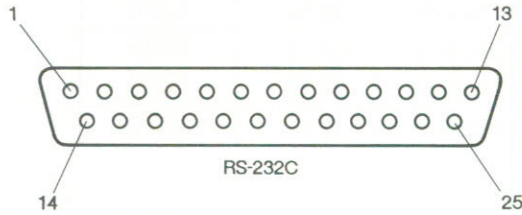


Prolonged exposure to sunlight or leaving this machine in a hot environment may cause permanent damage.

APPENDIX D: I/O INTERFACES

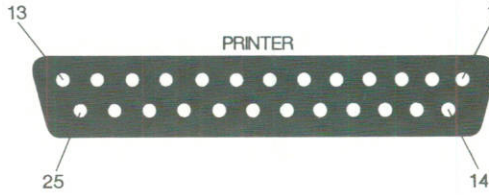
RS-232 Interface

25 pin D SUB



Pin Number	Signal Name	I/O
1	Signal Ground	
2	Transmitted Data	O
3	Received Data	I
4	Request to Send	O
5	Clear to Send	I
6	Data Set Ready	I
7	Signal Ground	
8	Carrier Detector	I
9 - 19	Not Connected	
20	Data Terminal Ready	O
21	Not Connected	
22	Ring Indicator	I
23 - 25	Not Connected	

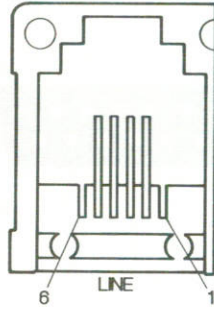
Printer Interface
25 pin D SUB



Pin Number	Signal Name	I/O	Pin Number	Signal Name	I/O
1	-Strobe	O	14	-Auto Feed	O
2	+Data Bit 0	O	15	-Error	I
3	+Data Bit 1	O	16	-Initialize Printer	O
4	+Data Bit 2	O	17	-Select Input	O
5	+Data Bit 3	O	18-25	Ground	
6	+Data Bit 4	O			
7	+Data Bit 5	O			
8	+Data Bit 6	O			
9	+Data Bit 7	O			
10	-Acknowledge	I			
11	+Busy	I			
12	+Paper End	I			
13	+Select	I			

Line Interface

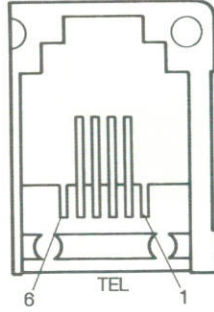
6 pin Dupont BERG Modular Jack



Pin Number	Signal Line	I/O
1	Not Connected	
2	A	
3	RING	I
4	TIP	O
5	A1	
6	Not Connected	

Phone Interface

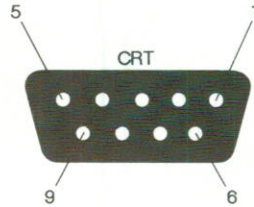
6 Pin Dupont BERG Modular Jack



Pin Number	Signal Line	I/O
1	Not Connected	
2	A	
3	RING	I
4	TIP	O
5	A1	
6	Not Connected	

CRT Interface

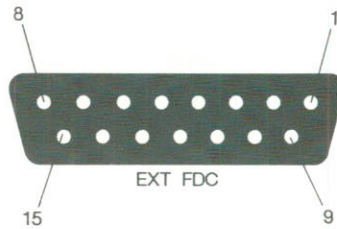
9 Pin D SUB



Pin Number	Signal Name
1	Ground
2	Ground
3	Red
4	Green
5	Blue
6	Intensity
7	Reserved
8	Horizontal Drive
9	Vertical Drive

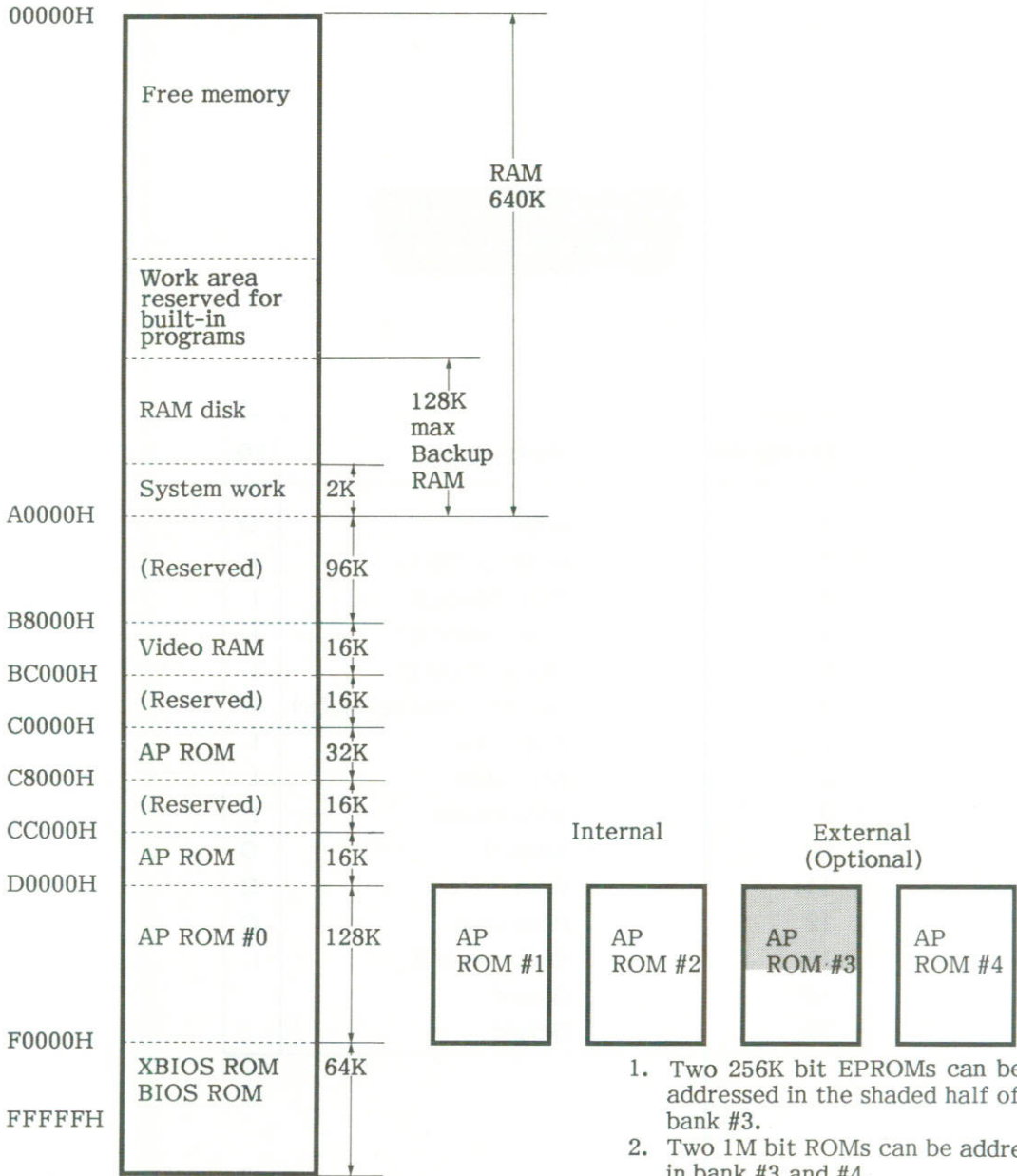
EXT FDC Interface

14 Pin D SUB



Pin Number	Signal Name	I/O
1	Index	O
2	Motor Enable C	I
3	Drive Select D	I
4	Drive Select C	I
5	Motor Enable D	I
6	Direction (Stepper Motor)	I
7	Step Pulse	I
8	Write Data	I
9	Write Enable	I
10	Track 0	O
11	Write Protect	O
12	Read Data	O
13	Select Head 1	I
14	Ground	
15	Ground	

APPENDIX E: MEMORY MAP



1. Two 256K bit EPROMs can be addressed in the shaded half of bank #3.
2. Two 1M bit ROMs can be addressed in bank #3 and #4.

APPENDIX F: MULTISPEED CHARACTER CODES

DECIMAL VALUE	→	0	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240
↓	HEXA DECIMAL VALUE	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	BLANK (NULL)	▶	BLANK (SPACE)	0	@	P	'	p	Ç	É	á	☐	☐	☐	∞	≡
1	1	☺	◀	!	1	A	Q	a	q	ü	æ	í	☐	☐	☐	β	±
2	2	☺	↕	"	2	B	R	b	r	é	Æ	ó	☐	☐	☐	Γ'	≥
3	3	♥	!!	#	3	C	S	c	s	â	ô	ú	☐	☐	☐	π	≤
4	4	♦	⌘	\$	4	D	T	d	t	ä	ö	ñ	☐	☐	☐	Σ	∫
5	5	♣	§	%	5	E	U	e	u	à	ò	Ñ	☐	☐	☐	σ	∫
6	6	♠	■	&	6	F	V	f	v	à	û	á	☐	☐	☐	μ	÷
7	7	•	↓	'	7	G	W	g	w	ç	ù	o	☐	☐	☐	r	≈
8	8	•	↑	(	8	H	X	h	x	ê	ÿ	¿	☐	☐	☐	ϕ	°
9	9	○	↓	)	9	I	Y	i	y	ë	Ö	☐	☐	☐	☐	θ	•
10	A	○	→	*	:	J	Z	j	z	è	Ü	☐	☐	☐	☐	Ω	•
11	B	♂	←	+	;	K	[	k	{	ï	ç	½	☐	☐	☐	δ	↓
12	C	♀	└	,	<	L	\	l	|	î	£	¼	☐	☐	☐	∞	n
13	D	♪	↔	-	=	M	]	m	}	ì	¥	ì	☐	☐	☐	∅	2
14	E	♪	▲	.	>	N	^	n	~	Ä	Ŕ	«	☐	☐	☐	€	■
15	F	☀	▼	/	?	O	_	o	◊	À	f	»	☐	☐	☐	∩	BLANK 'FF'

APPENDIX G:
TELCOM VT100 CHARACTER SETS (U.S and U.K.)

G.1 U.S. Character Set

HEXA- DECIMAL VALUE	0	1	2	3	4	5	6	7
0	NUL SPACE		SP	0	@	P	'	p
1		DC1 (XON) Q	!	1	A	Q	a	q
2			"	2	B	R	b	r
3		DC3 (XOFF) S	#	3	C	S	c	s
4			\$	4	D	T	d	t
5	ENQ E		%	5	E	U	e	u
6			&	6	F	V	f	v
7	BEL G		'	7	G	W	g	w
8	BS H	CAN X	(	8	H	X	h	x
9	HT I		)	9	I	Y	i	y
A	LF J	SUB Z	*	:	J	Z	j	z
B	VT K	ESC I	+	;	K	[	k	{
C	FF L		,	<	L	\	l	!
D	CR M		-	=	M	]	m	}
E	SO N		.	>	N	^	n	~
F	SI O		/	?	O	_	o	DEL

G.2 U.K. Character Set

HEXA- DECIMAL VALUE	0	1	2	3	4	5	6	7
0	NUL SPACE		SP	0	@	P	'	p
1		DC1 (XON) Q	!	1	A	Q	a	q
2			''	2	B	R	b	r
3		DC3 (XOFF) S	£	3	C	S	c	s
4			\$	4	D	T	d	t
5	ENQ E		%	5	E	U	e	u
6			&	6	F	V	f	v
7	BEL G		'	7	G	W	g	w
8	BS H	CAN X	(	8	H	X	h	x
9	HT I		)	9	I	Y	i	y
A	LF J	SUB Z	*	:	J	Z	j	z
B	VT K	ESC I	+	;	K	[	k	{
C	FF L		,	<	L	\	l	!
D	CR M		-	=	M	]	m	}
E	SO N		.	>	N	^	n	~
F	SI O		/	?	O	_	o	DEL

G.3 Special and Line Drawing Character Set

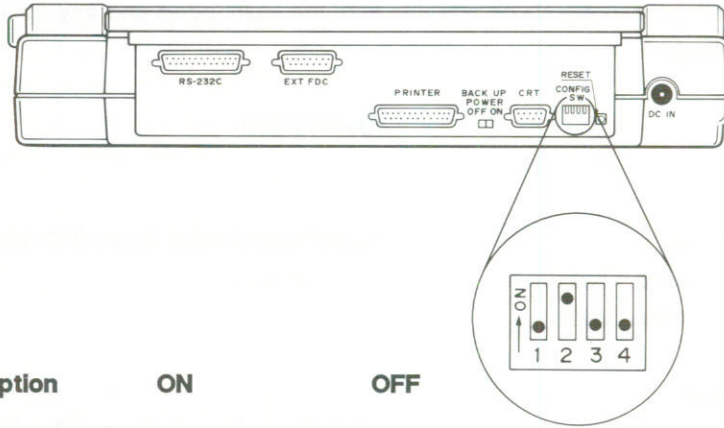
HEXA- DECIMAL VALUE	0	1	2	3	4	5	6	7
0	NUL SPACE		SP	0	@	P	◆	— SCAN 3
1		DC1 (XON) Q	!	1	A	Q	≡	— SCAN 5
2			"	2	B	R	⋈	— SCAN 7
3		DC3 (XOFF) S	#	3	C	S	ƒ	— SCAN 9
4			\$	4	D	T	℞	†
5	ENQ E		%	5	E	U	ℓ	‡
6			&	6	F	V	°	⊥
7	BEL G		'	7	G	W	±	‡
8	BS H	CAN X	(	8	H	X	ℵ	|
9	HT I		)	9	I	Y	∇	≤
A	LF J	SUB Z	*	:	J	Z	┘	≥
B	VT K	ESC I	+	;	K	[	┘	π
C	FF L		,	<	L	\	┘	≠
D	CR M		—	=	M]	┘	£
E	SO N		.	>	N	^	┘	•
F	SI O		/	?	O	(BLANK)	— SCAN 1	DEL

APPENDIX H: MULTISPEED COMPATIBLE PERIPHERALS

The following tables list peripherals compatible with the MultiSpeed and any special cabling or hardware requirements.

Peripherals	Description
Printer	
NEC Pinwriter Series, Epson MX or FX series, Okidata 83, IBM Proprinter or compatibles	MultiSpeed Printer Cable (PC-16-94) is necessary.
R/G/B Color Monitor	
NEC Multisync IBM Color Display	CRT Cable included in monitor box CRT Cable attached
Telecommunications	
MultiSpeed 300/1200 BPS Modem (PC-16-61)	Optional
MultiSpeed RS-232 Cable (normal) (PC-16-95)	Optional
MultiSpeed RS-232 Cable (reverse) (PC-16-96)	Optional
Phone Cable (PC-8499A-04)	Included with MultiSpeed 300/1200 BPS Modem (PC-16-61)
Power Supply	
MultiSpeed AC Adapter (PC-8671A-01)	Included with the MultiSpeed
MultiSpeed NiCd Battery Pack (PC-16-70)	Included with the MultiSpeed and available as an option.
MultiSpeed Car Battery Cable (PC-16-98)	Optional
For using the MultiSpeed as External Disk Drives	
IBM PC, IBM PC/XT or IBM PC compatible computer as the host computer	MultiSpeed External Transfer Cable Kit (PC-16-97) is required

**APPENDIX I:
CONFIG SW (CONFIGURATION SWITCH) SETTINGS**



SW	Description	ON	OFF
1	TEST	Loop Test	Operation
2	CG	Standard	Not used
3	ROM	256Kbits	1Mbits
4	CPU Clock	4.77MHz	9.54MHz

- SW1 This switch should always be in the OFF position (down). If it is switched ON (up) the MultiSpeed will go into a self testing loop and you will not be able to operate the MultiSpeed.
- SW2 This switch should always be ON (up). If it is turned OFF (down), nothing will be displayed on the screen.
- SW3 Set this switch to ON (up) when you use the optional ROM. Choose 256 Kbits or 1 Mbits according to your ROM type.
- SW4 Move this switch up when you want to set the CPU clock speed for the low setting (4.77 MHz). Normally, it's best to leave the switch down at the high setting (9.54 MHz).



You can also set the CPU clock speed with the SETUP Clock command. We recommend that you set the CPU clock speed with the SETUP program because if CONFIG SW #4 is moved up to select the low setting, you cannot use SETUP to change the setting until you move the switch down again. As long as the switch is down, you can set the "Low" or "High" setting with the SETUP utility program.

APPENDIX J: RAM640R.COM AND COLD.COM FILES

Your MultiSpeed is set up with a RAM disk, an area reserved in RAM that can be used like a diskette. This means you can load and save files on the RAM disk (drive C: for this system), just like you can with a diskette in drive A: or drive B:.

RAM disks set up on most computers are volatile. This means they will be erased when you turn the computer off. The MultiSpeed RAM disk, however, is non-volatile.

Files you store on the MultiSpeed RAM disk remain there even after you turn the machine off. You can even change the size of the MultiSpeed RAM disk with the SETUP utility program (from 5K to 126K).

Since the MultiSpeed has the built-in programs which can be used while other program is occupying the MultiSpeed's main memory, a small amount of memory is always reserved for built-in programs. This reserved area is volatile on the other hand the RAM disk is non-volatile. So it is necessary to save the data you create by using the MultiSpeed built-in programs like other data processing programs.

On your MultiSpeed MS-DOS system diskette, there are two special files that are not found on a standard MS-DOS system diskette:




RAM640R.COM	Disables the non-volatile RAM disk and reserved areas of the RAM for built-in programs.
COLD.COM	Initializes all of RAM disk and restores the non-volatile RAM disk and reserved area for built-in program to the default settings.

When you execute RAM640R.COM, the POPUP programs and the RAM disk are disabled. The reserved areas for the built-in programs are then made available for very large MS-DOS programs (638K of RAM can be used). If you use RAM640R, please keep these important points in mind:




You will not be able to use the built-in programs, NOTEPAD, OUTLINER, FILER, DIALER, TELCOM, or SETUP, from the POP UP key or stand-alone programs. The POP UP key is disabled and these programs will not execute if loaded from diskette.

- You cannot use the SETUP utility to restore the MultiSpeed RAM disk. To return to the default mode, (the mode you are in when you start up the MultiSpeed with work area size for built-in programs defined and a RAM disk), you will have to use the COLD program.

RAM640R clears RAM disk. Use the MS-DOS DIR command (DIR C:) to review the contents of the RAM disk before you execute RAM640R. If there are files in the RAM disk that you want to save, use the MS-DOS COPY command to copy them to a diskette.

Use the COLD program to reset the RAM configuration of the MultiSpeed. It will define the work area for built-in programs and restore the RAM disk. Use COLD to reset the effects of RAM640R, or when the MultiSpeed hangs up and you cannot resolve the problem by pressing    or the RESET button on the back of the MultiSpeed.




Neither    nor the RESET button on the MultiSpeed initializes all of the RAM, nor do they restore the SETUP parameters. COLD, however, initializes all of the RAM. Because COLD will erase any files stored on the RAM disk, use it only after other methods of resetting the system have failed.

Remember that you must use the COLD or RAM640R program from the MS-DOS system diskette that you received with the MultiSpeed. A standard MS-DOS disk does not have these programs.

Here's a short description of how to use RAM640R.COM and COLD.COM.













Be sure the MS-DOS system diskette is in drive A, then type:

```
A>RAM640R_
```

Press . After a few moments, you will see these messages displayed below the copyright message:

```
NEC MULTISPEED
RAM Test 638K
RAM disk not specified.
Current date is Mon 1-07-1980
Enter new date (mm-dd-yy) : _
```


Enter the date and time, press  and you're ready for operation. You are now in the User Memory mode. You can't use the SETUP utility to set parameters. However, parameters can be set with these keys:

		Sets CPU clock speed to high
		Sets CPU clock speed to low
		Switches from CRT to LCD
		Switches from LCD to CRT
		Turns FDC power save mode on
		Turns FDC power save mode off

The built-in programs, including the SETUP utility, are disabled until you execute the COLD program. You may also need to execute COLD when the MultiSpeed hangs up.

Be sure the MS-DOS system diskette is in drive A, then type:

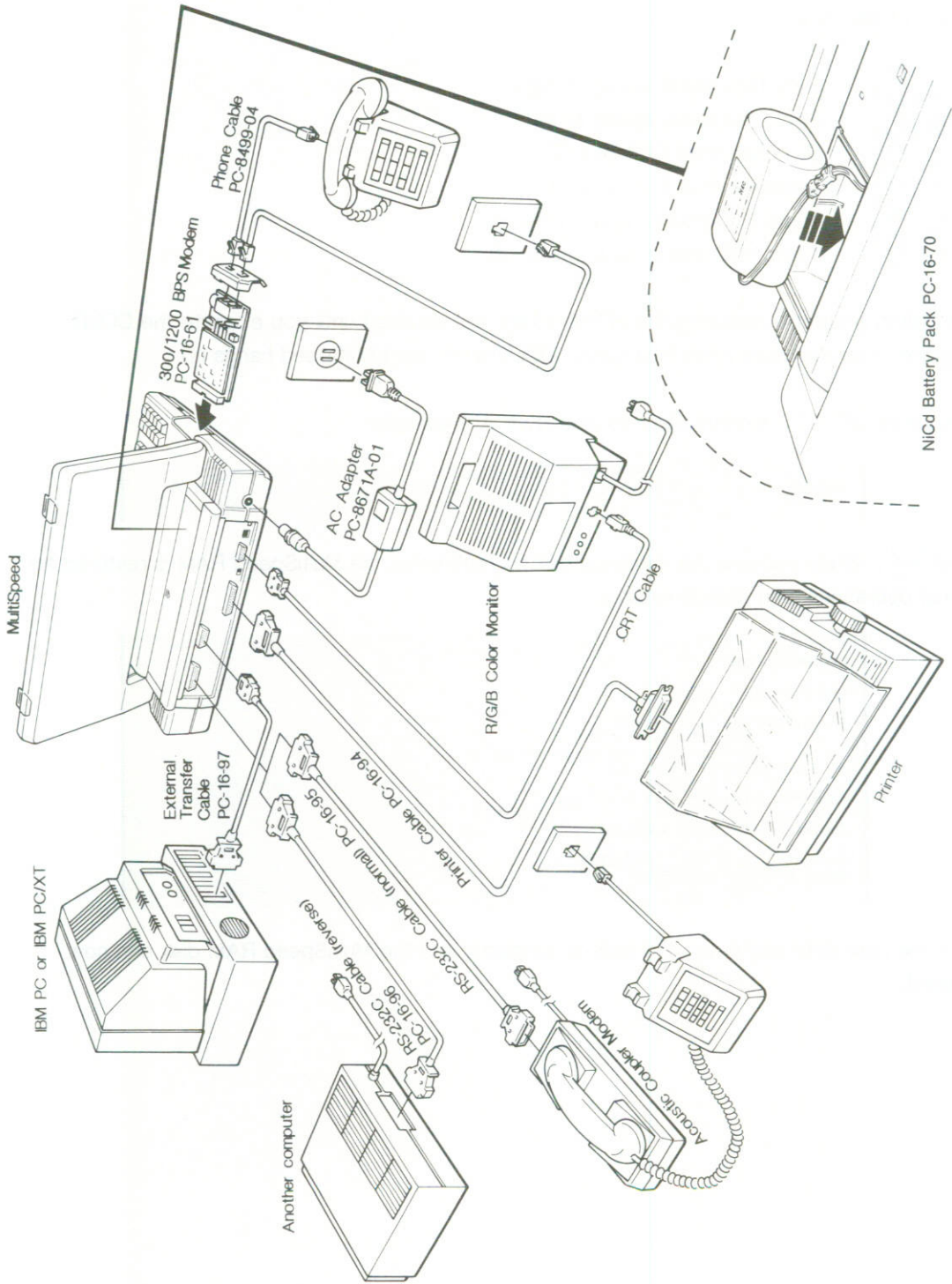
```
A>COLD_
```

Press . When you see the message below, you'll know the MultiSpeed RAM is restored for normal operations with default settings.

```
NEC MULTISPEED
RAM Test 607K
Installing RAM disk Driver
  Buffer size: 31 K
  Sector size: 512 Bytes/Sector
  Directory entries: 64
Formatting the RAM disk.....
Installing built-in software
Current date is Mon 1-07-1980
Enter new date (mm-dd-yy): _
```

Enter the new date and time. The built-in programs and the MultiSpeed RAM disk can now be used.

APPENDIX K: CONNECTION OF PERIPHERALS



INDEX

B

- BOOTING THE MULTISPEED
 - adjust LCD brightness, 44
 - check list, 42
 - mount MS-DOS diskette, 43
 - power off, 44
 - power on/off, 42
 - RESET, 45
 - saving data, 45
 - when to reset, 46

C

- CAR BATTERY CABLE
 - connection procedures, 35
 - optional component, 15
- COMPONENTS
 - family of MultiSpeed
 - components, 13
 - optional components, 14
- CONFIG SW
 - settings, 39
 - switch designations, 22
- CONFIG.SYS
 - copying, 121
 - for earlier versions of MS-DOS, 123
 - MS-DOS versions 3.1 and lower, 123
 - on system disk, 121
 - renaming, 121
 - renaming CONFIG.SYS, 121
 - restoring the original file, 127
- CONNECTION PROCEDURES
 - BACK UP POWER switch, 38
 - battery indicator, 37
 - car battery cable, 35
 - CONFIG SW settings, 39
 - connecting AC adapter, 34
 - installing battery pack, 34
- CONNECTORS & SWITCHES
 - BACKUP POWER switch, 21
 - CONFIG SW, 21
 - CRT port, 21
 - DC IN plug, 21
 - EXT FDC port, 21
 - LINE port, 21
 - POWER switch, 21
 - Printer port, 21
 - RESET button, 21
 - TEL port, 21
 - Volume knob, 21

D

- DATA TRANSFER
 - MultiSpeed and host, 129
 - MultiSpeed and IBM PC AT, 130
 - MultiSpeed and IBM PC XT, 131
- DATE
 - internal clock, 52
 - setting the date, 52
- DIALER
 - Add command, 94
 - backing up DIALER.DAT, 100
 - cursor movement, 97
 - Delete command, 97
 - DIALER.DAT file, 100
 - Modify command, 98
 - Quit command, 99
 - selecting a command, 93
 - starting DIALER, 93
 - tutorial, 93
- DIALER USER'S MANUAL
 - signs, symbols & warnings, 3
- DISK DRIVES
 - 3.5 inch drives, 6
 - indicators, 20
- DISKETTES
 - care and handling, 29
 - cautions, 29
 - mounting, 31
 - removing, 31
 - write protection, 30

E

- EXTERNAL TRANSFER CABLE
 - connecting to IBM PC, 7
 - MultiSpeed drives as external drives, 120
 - using disk drives as slaves, 7

F

- FILER
 - Add command, 79
 - command selection, 76
 - Design command, 76
 - Quit command, 83
 - Save command, 81
 - starting FILER, 75
 - tutorial, 75
 - typing data cards, 79
- FILER USER'S MANUAL
 - signs, symbols & warnings, 3

G

GETTING STARTED

- car battery, 15
- choosing a work site, 19
- closing the LCD cover, 17
- family of components, 13

- first steps, 10
- Introduction to MS-DOS, 11
- locking the LCD cover, 17
- NiCd battery pack, 12, 16
- OAG Card, 12
- opening the LCD cover, 17
- operating conditions, 19
- optional components, 14
- unpacking the MultiSpeed, 10

I

INTERNAL CLOCK

- setting the date, 52
- setting the time, 53

INTRODUCTION

- DIALER, 2
- DIALER User's Manual, 3
- documentation provided, 3
- FILER, 2
- FILER User's Manual, 3
- keytops in manuals, 4
- NOTEPAD, 2
- NOTEPAD User's Manual, 3
- OUTLINER, 2
- OUTLINER User's Manual, 3
- resident programs, 2
- screen examples in manuals, 5
- SETUP, 2
- signs in manuals, 3
- symbols in manuals, 3
- TELCOM, 2
- TELCOM User's Manual, 3
- this manual, 3
- warnings in manuals, 3

K

KEYBOARD

- cursor controls, 28
- function keys, 28
- numeric keypad, 27
- typewriter area, 24

L

LCD

- adjusting the screen, 17
- assembling after removal, 118

- closing the cover, 17
- opening the cover, 17
- removing, 116

LCD SCREEN

- adjusting brightness, 44
- unpacking the screen, 10
- using another monitor, 114

M

MANUALS

- keytops, 4
- screen examples, 5

MODEM

- 300/1200 BPS Modem, 7
- connection, 109
- using the RS-232 cable, 7
- with DIALER, 7
- with TELCOM, 7

MS-DOS

- copy system diskette, 56
- DISKCOPY command, 56
- FORMAT command, 54
- formatting diskettes, 54
- operating systems, 50
- setting the date, 52
- setting the time, 53
- starting MS-DOS, 52
- write-protect system diskette, 51

MULTISPEED

- battery case, 23
- built-in programs, 6
- choosing a work site, 19
- closing the LCD cover, 17
- direct sunlight, 19
- external transfer cable, 7
- family of components, 13
- locking the LCD cover, 17
- modem, 7
- opening the LCD cover, 17
- operating conditions, 19
- optimum humidity, 19
- optimum temperatures, 19
- optional features, 7
- parts & indicators (front), 20
- RS-232C port, 23
- standard features, 6
- TEL port, 23
- using a color monitor, 22
- VOLUME control, 23

N

NICD BATTERY PACK

- connection, 34
- unpacking, 12, 16

NOTEPAD

- Command mode, 64, 65
- Cut and Paste commands, 69
- Edit mode, 64
- insert/Non-Insert mode, 65
- inserting text, 68
- Right Justify command, 69

- Save command, 73
- Search command, 71
- starting NOTEPAD, 66
- tutorial, 64

NOTEPAD USER'S MANUAL

- signs, symbols & warnings, 3

O

OUTLINER

- cursor movement, 88
- Cut command, 88
- Edit command, 85
- Expand command, 91
- Fold command, 90
- Insert command, 86
- Paste command, 89
- Save command, 92
- starting OUTLINER, 85

OUTLINER TUTORIAL

OUTLINER USER'S MANUAL

P

PARTS AND INDICATORS

- drive A, 20
- drive B, 20
- LCD screen, 20

PERIPHERAL DEVICES

- 300/1200 BPS modem, 109
- compatible monitors, 112
- connecting EXT FDC, 120
- data transfer programs, 129
- DIALER connection, 109
- disk drive designations, 128
- external modem connection, 110
- monitor connection, 112
- monitor settings, 112
- MS-DOS version number, 121
- Multispeed drives as external drives, 120
- printer connection, 108
- renaming CONFIG.SYS, 121
- SETUP for external drives, 124
- TELCOM connection, 109
- phone cable connection, 110

PORTS

- EXT FDC port, 23
- Printer port, 23
- RMS-232C port, 23

POWER SWITCH

- BACKUP switch, 23
- OFF, 44

PRINTER CABLE

- connecting the printer, 108
- printer port, 21

R

RAM

- disk, 6
- disk changing parameters, 157
- disk clearing with RESET, 22
- disk Ramdisk command, 156
- disk review, 156
- testing, 45

RESET BUTTON

- clearing the RAM disk, 22
- restarting the MultiSpeed, 47

RS-232 CABLE

- connecting to a modem, 7
- port, 23

RS-232C CABLE

- serial data transfers, 7

S

SETUP UTILITY

- abandoning settings, 138
- changing Ramdisk parameters, 157
- Clock command, 144
- Command line, 140
- direct start, 137
- Drive command, 145
- Exit command, 147
- FDC command, 148
- Help line, 140
- Help system, 142
- Message Area, 140
- parameter list, 139
- Pop command, 149
- Pop command RAM disk review, 150
- Quit command, 154
- Ramdisk command, 155
- Ramdisk command RAM disk review, 156
- Screen command, 160
- Screen command: Active, 161
- Screen command: Color, 161
- Screen command: Exit, 163

- Screen command: Intensity, 163
- Screen command: Palette, 164
- screen display, 139
- selecting a command, 141
- setting and changing parameters, 134
- setting work size for built-in program, 151
- SETUP commands, 134
- starting as a stand-alone, 136
- starting from the POP UP key, 137
- starting from the POP UP key or from the MS-DOS prompt, 135
- stopping SETUP, 138

T

TELCOM USER'S MANUAL

- signs, symbols & warnings, 3

TIME

- internal clock, 53
- setting the time, 53

TUTORIALS

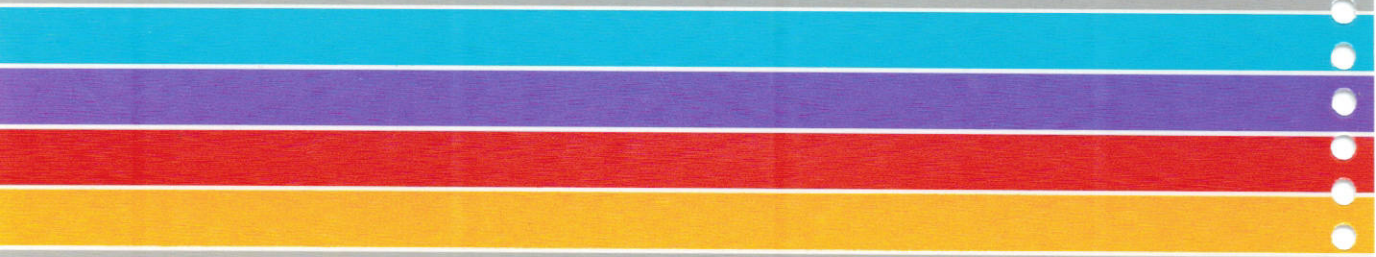
- before you begin, 63
- DIALER, selecting a command, 93
- DIALER , 93
- DIALER Add command, 94
- DIALER cursor movement, 97
- DIALER Delete command, 97
- DIALER Modify command, 98
- DIALER Quit command, 99
- DIALER.DAT file, 100
- FILER, 75
- FILER Add command, 79
- FILER command selection, 76
- Filer Design command, 76
- FILER Quit command, 83
- FILER Save command, 81
- Help, 60
- Help command, 61
- HELP key, 60
- Help line, 61
- HELP window, 61
- introduction, 60
- NOTEPAD, inserting text , 68, 64
- NOTEPAD command mode, 64
- NOTEPAD Cut and Paste commands, 69
- NOTEPAD Edit mode, 64
- NOTEPAD Right Justify command, 69
- NOTEPAD Save command, 73
- NOTEPAD Search command, 71
- OUTLINER, 84
- OUTLINER cursor movement, 88

- OUTLINER Cut command, 88
- OUTLINER Edit command, 85
- OUTLINER Expand command, 91
- OUTLINER Fold command, 90
- OUTLINER Insert command, 86
- OUTLINER Paste command, 89
- OUTLINER Save command, 92
- running three programs , 102
- selecting a command, 62
- starting DIALER, 93
- starting FILER, 75
- starting NOTEPAD, 66
- starting OUTLINER, 85

W

WORKING CONDITIONS

- choosing a work site, 19
- direct sunlight, 19
- maximum humidity, 19
- maximum temperature, 19
- minimum humidity, 19



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