KAYPRO®

286i

READ ME FIRST

USER'S GUIDE

KAYPRO 286i

User's Guide and Reference Manual

Part Number 5735-B

FCC INFORMATION

As Kaypro keeps in step with computer technology, the models have changes which affect FCC ratings. The proper rating is affixed to the back of each computer, and the appropriate FCC information is given here.

FCC Information for Class A

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

If this computer is used with peripheral devices, such as a printer or modem, then well-shielded cables must be used to preserve the radio interference characteristics.

FCC Information for Class B

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 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. However, there is no guarantee that interference will not occur in a particular installation. If this 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 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 Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

WARNING: This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with Class B limits may be attached to this computer, and only with a shielded cable. Operation with non-certified peripherals or with unshielded cable is likely to result in interference to radio and TV reception.

Note:
TO PREVENT RADIO AND TV INTERFERENCE, SHIELDED CABLES MUST BE USED TO CONNECT PERIPHERAL DEVICES TO YOUR COMPUTER. THESE CABLES ARE AVAILABLE FROM YOUR KAYPRO DEALER.

Table of Contents

Table of Contents

Chapter One
Introduction

Chapter One
Introduction

Thank you for purchasing the KAYPRO 286i computer. You have invested in a system that provides high performance and the capacity to add accessory boards and storage devices as your computing needs grow. This manual is designed to help you get started as quickly as possible, regardless of your previous computer experience.

- **Chapter 1 - Introduction** outlines this manual and lists the standard features of the K286i.
- **Chapter 2 - Hardware Installation** explains basic hardware setup procedures. If you're an experienced computer user, start in Chapter 2.
- **Chapter 3 - Software Installation** is divided into two sections that describe the software installation procedures for the K286i-A and K286i-C.
- **Chapter 4 - Computer Basics** contains tutorial information about personal computers, operating systems, commands, and files. If this is your first computer, be sure to read Chapter 4.
- **Chapter 5 - Getting Started With Diskettes** explains how to use your K286i without a hard disk. MS-DOS utilities such as COPY and DISKCOPY are also explained in detail.
- **Chapter 6 - Getting Started With the Hard Disk** will familiarize you with the K286i-C, including use of the KAYPRO Master Menu and an explanation of the directory system.
- **Chapter 7 - Advanced Usage** contains information on advanced MS-DOS commands including wildcards, shortcuts, and other special features of the operating system.
- **Chapter 8 - KAYPRO Utility Programs** introduces the utility programs packaged with your computer. These programs are unique to KAYPRO computers and can be a useful addition to your software library.
- **Chapter 9 - Video Information** explains the differences between the various KAYPRO video systems. It also introduces the video switching

software and lists switch settings used to configure the Multi-Video display board.

- **Chapter 10 - Technical Information** contains more detailed information about the hardware, including specifications, switch settings, physical layout of the circuit boards, and procedures for adding optional equipment.

- The **Appendices** contain supplementary information, including an ASCII chart and information on using the RAMDISK software.

Standard Features of the K286i

- Intel 80286 microprocessor
- 10MHz Clock Speed
- 640K of Random-Access Memory (RAM)
- Enhanced AT-compatible keyboard with oversized SHIFT and ENTER keys
- Real-time clock with battery backup
- Security keylock system
- 1.2 Megabyte high-density diskette drive
- Six sixteen-bit expansion slots
- Two eight-bit expansion slots
- Disk controller board capable of handling up to two hard drives and two diskette drives simultaneously
- Internal capacity for three half-height drives and one full-height hard drive, or one half-height and two full-height drives.
- Socket for an 80287 math co-processor chip

Differences Between the K286i-A and K286i-C

The K286i-A is not shipped with a serial/parallel I/O card, and is equipped with one diskette drive and the basic software package. The K286i-C has one dis-

kettc drive, an internal 40 Megabyte hard disk, a serial/parallel I/O card and the completc KAYPRO software package.

Optional Accessories

The following items are available from your KAYPRO dealer and can be added to either model of the KAYPRO 286i.

- 12" Monochrome Monitor
- 13" Color Graphics Monitor
- 13" Enhanced Graphics Color Monitor
- Enhanced Graphics Adapter
- Serial/parallel I/O Card (with one serial and one parallel port)
- Second Diskette Drive (either 1.2MB or 360KB drive)
- Internal 60MB tape backup, 5MB/min
- External 60MB tape backup, 5MB/min
- 40MB 5 1/4" High Speed Drive
- 82MB 5 1/4" High Speed Drive
- 130MB 5 1/4" High Speed Drive

What about the other Manuals?

If you are new to personal computers, you may be thinking: "All these different manuals! Which should I read first?" This *User's Guide* is your primary reference document for assembling your computer, installing the software, and initial operations.

When your computer is assembled and functioning, the primary concern will be learning the applications software packages that you received with your KAYPRO. Each specific program comes with an instruction manual which explains its use in detail.

You will also want to learn more about the MS-DOS operating system so that you can use your computer more efficiently. When you get past the range of tutorial material in this book, refer to the *MS-DOS User's Guide*.

Where can I get more help?

Your local KAYPRO dealer can answer your initial questions about your KAYPRO Computer. We also suggest asking your dealer how to join the nearest KAYPRO User's Group. These groups provide a fun and sociable way to share information with other KAYPRO owners.

If you want additional information on a topic not covered in these manuals, you might want to do some further reading. There are many computer books and magazines designed for both novices and sophisticated users. A listing of current titles is included in the appendices. Check the computer section of your local library or bookstore.

For technical help with specific applications software or an accessory product not sold by KAYPRO, we suggest contacting the manufacturer of the product. If the software vendor is unable to help, try calling our software support hotline at **(619) 481-3920.**

Chapter Two
Hardware Installation

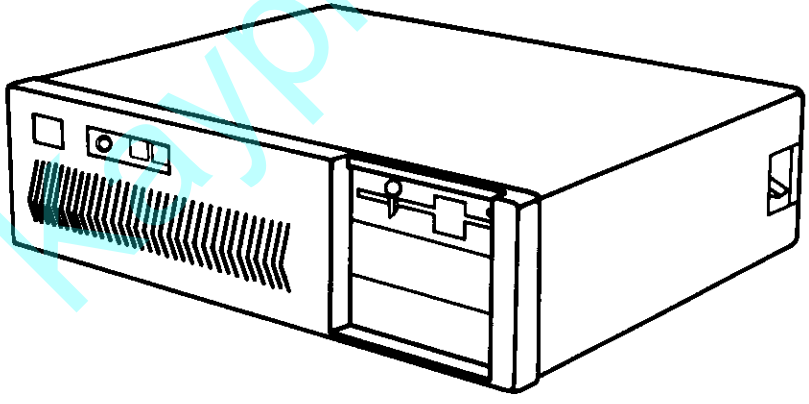
Chapter Two
Hardware Installation

This chapter explains how to connect your computer components and prepare them for operation. If you would like basic information on the computer before you begin, please refer to the material in Chapter 4.

Assembling Your K286i

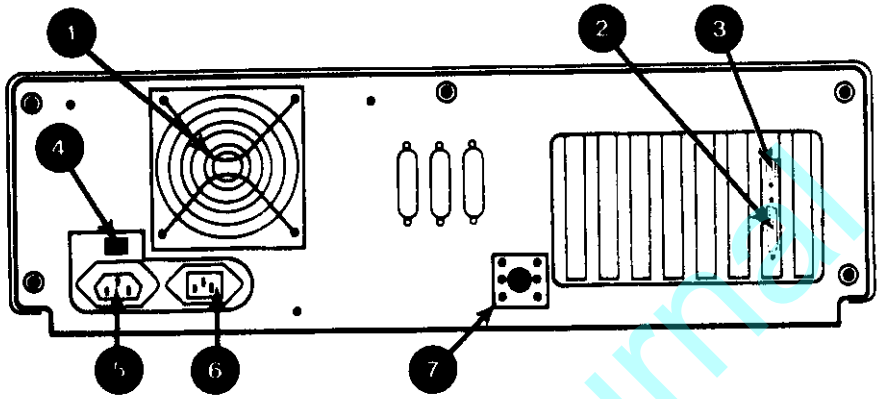
1. Remove the computer and keyboard from the shipping box. Set aside the packing materials and save them in case you need to transport the computer. The box should also contain:

- KAYPRO Ownership Documents
- Manuals and Addenda
- Software Package
- Power Cable
- Two Keys for the Keyboard Security Lock



2. Set the computer on a flat work surface. The ideal work surface is a sturdy table that allows access to the front and rear of the unit. Have a small (#2) flat-bladed screwdriver handy.

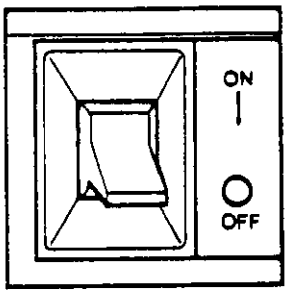
3. Refer to the illustration below and note the position of the keyboard connector, the parallel port, the serial port, and the computer power connector.



1. Fan
2. Parallel Port (Centronics)
3. Serial Port (RS-232C)
4. 120/240 Volt Switch
5. Monitor Power Connector
6. Power Cord Connector
7. Keyboard Connector

Note:
Since the video adapter card is an optional accessory, no specific card is shown in the illustration. With a video card installed, your rear panel will appear different than the one shown. For more information on KAYPRO video card options and how to identify them, see the illustration on page 2-3.

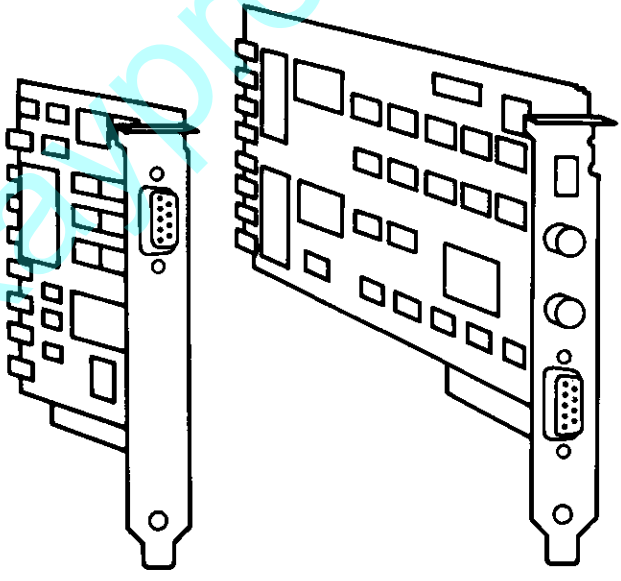
4. The power switch is located on the right side of the computer. Make certain that it is in the OFF (down) position.



5. Remove the monitor from its box and carefully set it on the computer, with the monitor's rear panel, power cord, and signal cable facing the rear of the computer.

6. KAYPRO monitors have a nine-pin connector (a DB-9S) at the end of the signal cable. This connector fits into the video connector port. The video port can always be distinguished from the serial port, even though both are 9-pin connectors. The serial port is a male DB-9 connector (it has external pins) while the video connector is female (it has receptors for pins). Use a small flat-bladed screwdriver to attach the connector from the monitor to the video connector port.

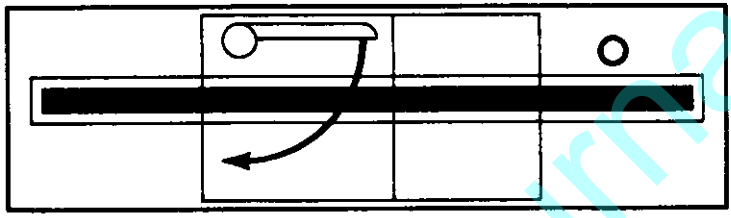
Use the following illustration to determine whether you have a KAYPRO Multi-Video card (below left) or EGA card (below right) installed. If your video card does not resemble either of these illustrations, consult your dealer to determine which video adapter card is installed in your K286i.



7. Make sure both the monitor and computer power switches are turned OFF. Then plug the monitor's power cord into a grounded 120-volt outlet.

8. Connect the keyboard cord to its connector on the computer.

9. To open the disk drive door, turn the lever to a horizontal position. Close the drive by turning the lever down as shown.



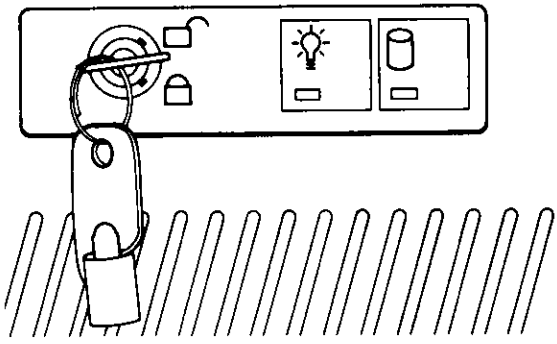
10. Remove the cardboard protector(s) from the diskette drive(s). Save these protectors and put them back in the drives whenever you transport the computer.

11. Connect one end of the computer's power cord to its connector (6) on the rear panel of the computer. Check the power selector switch on the rear panel to verify that it is set for 120 volts. Plug the other end of the power cord into a grounded 120-volt outlet.

12. Use one of your two keyboard security keys to set your keylock to the unlocked (upper) position. See illustration, opposite page.

Note:
When the keylock is set for the locked (lower) position, the keyboard input is disabled. Setting the lock will not prevent the computer from booting, nor will it shut off the power if you lock it while the computer is operating. It is intended to prevent unauthorized persons from tampering with the computer.

You have now completed the hardware installation. Your K286i should now be properly connected for operation.



Power-Up Test

Now let's perform a simple test of the connections you've made to this point. Follow the steps below to start your computer:

1. Verify that all power cords are plugged in and that the cardboard protectors have been removed from the disk drives.
2. Place the monitor, system unit, and keyboard in a convenient position.
3. Switch on the monitor.
4. Turn on the computer using the switch on the side.

How Can I Tell If It's Working Properly?

If everything is connected correctly, you should see and hear the following:

1. The green LED will light up beneath the light bulb icon in the keylock panel.
2. There will be a quiet whirring sound from the power supply fan.
3. The monitor will display the version number of the ROM BIOS.
4. The built-in diagnostics will begin checking the Random Access Memory (RAM) and its progress will be reflected on the screen.
5. You will hear a single short "beep" as the RAM check is completed.

6. The red LED on the front of the diskette drive (Drive A) will light as the computer searches for the Disk Operating System (DOS) files.

7. If your computer has a hard disk, the red LED will light up beneath the hard disk icon in the keylock panel as the computer continues its search for the DOS files.

8. On a diskette-drive only system (K286i-A), or if the Disk Operating System (MS-DOS) files have not been installed on your hard disk, you'll see the message:

Boot disk failure. Type key to Retry_

So far so good! If you see this message, then you know you have properly connected the keyboard and monitor, and that the computer knows enough to look for the Disk Operating System files. For a more complete explanation of "booting" and "rebooting", see the section titled "Booting the System" at the end of this chapter.

If you see the message:

Invalid configuration information - please run SETUP program
Strike the F1 key to continue

Press the F1 function key (at the top of the keyboard) to proceed. You will run the SETUP program in Chapter Three.

Note to hard disk owners:
The list below will help you determine what your computer dealer has done to prepare your computer for use:

- If you see the KAYPRO Master Menu when you boot up, your dealer has installed ALL of the software. If the date and time shown by the computer are correct, you may turn to Chapter Six. (If you need to set the date and time, see Chapter 3.)

- If you see only the C:\> prompt or a date/time prompt, your hard disk has been initialized but the software has not been installed. See Chapter Three for instructions on software installation.

- If you don't see *either* the Master Menu, a date/time prompt, or the system (C:\>) prompt, you will need to initialize your hard disk and copy system (DOS) files to it before installing the software bundle. See the "Initializing the Hard Disk" section in the next chapter.

If anything ELSE happened...

1. Check that your keyboard is connected properly. If not, there will be an error message on the screen.

2. Make sure the screws on the monitor plug have been carefully tightened and check your power cords for good connections. If your wall outlet or surge suppressor has a switch, make sure it's turned on.

3. If all else fails, call your KAYPRO dealer for help.

Booting the System

When the computer is switched on, it follows a procedure that is permanently stored in ROM (Read Only Memory). This procedure directs the computer to check the RAM (Random Access Memory) and look for a diskette in the A drive. If it doesn't find a diskette in drive A, it activates the C drive, looks for the operating system and loads it into RAM. If the operating system is not found on either drive, an error message will appear on the screen. The process of reading the drive and loading the operating system into RAM is known as *booting the system*. If your computer has a hard disk, you must first install the system files on your hard disk before you can "boot up" without using a floppy disk.

When you *reboot* the system using either of the methods described below, everything that is currently in RAM will be erased. Rebooting can sometimes be useful, however, particularly when the computer is in a software hangup and does not respond to the keyboard.

You can reboot the computer by one of the following methods.

1. Press the *Ctrl*, *Alt*, and *Del* keys simultaneously.

2. If there is no response to method #1, turn the machine OFF, wait thirty seconds, and turn it ON again. Use this method as a last resort if method #1 is not effective.

Chapter Three
Software Installation

Chapter Three
Software Installation

Overview

In the previous chapter, we explained the steps required to prepare your computer hardware for operation. That's the first half of the installation process. Now we're ready for the second half – installing the software. This chapter is divided into three sections: this overview, a section for K286i-A owners and a section for K286i-C owners.

Standard Equipment

The KAYPRO K286i comes with software to enable you to use your computer right away. The standard A Model software includes:

- **MS-DOS:** The Microsoft Disk Operating System. The operating system functions as a command interpreter for the other programs.
- **GW-BASIC:** A programming language which allows you to write custom programs to suit your individual needs.
- **KAYPRO Utility Programs:** Provided by Kaypro to help you use your computer more efficiently. There are programs to help you find and copy files, protect your hard disk, and more.

Owners of the C Model also receive:

- **Word Processing Programs:** To help you write, edit, correct, and print documents of any length.
- **A Thesaurus program:** Use with your word processor to put thousands of synonyms at your fingertips.

If you have the A Model, see Section A for installation instructions. If you have a 286i-C, see Section B for information on these procedures.

Section A - Software Installation K286i Model A

The full Model A software bundle consists of two KAYPRO Master Diskettes labeled *MS-DOS 3.2 & GW-BASIC 3.2.* These Master Diskettes contain the MS-DOS operating system, MS-DOS utilities, the GW BASIC programming language, and the KAYPRO utility programs.

The Master Diskettes should be copied to blank diskettes. If a copy is damaged, a new one can be created from the original. To copy your diskettes, you will need two blank diskettes and both your Master Diskettes. Follow these steps to copy your diskettes:

1. Insert Master Diskette #1 in Drive A and close the drive door.

2. Turn on the video monitor and the computer power switch.

Note:
During the installation process, if you are prompted to press the F1 key and run the SETUP program, press the F1 function key to continue. You will run SETUP after installing the complete software package.

---

3. Press *Enter* when the screen prompts for the date and press *Enter* again when prompted for the time.

4. When you see the DOS prompt (A>), type:

   DISKCOPY
   Press *Enter*

5. You will then see the screen prompt:

   Insert SOURCE diskette in Drive A
   Press any key when ready

6. Your SOURCE diskette (Master Diskette #1), is already in the drive. Press any key to start the DISKCOPY process.

7. The red light on the drive will glow while the computer reads the information on the diskette into memory. When this process is finished, you'll see:

   Insert TARGET diskette in Drive A
   Press any key when ready

8. Remove Master Diskette #1 from drive A. Insert a blank diskette (label it "Working Diskette #1") in the drive and close the drive door. This diskette will be an exact copy of Master Diskette #1. Press any key to finish copying Master Diskette #1 to Working Diskette #1.

9. When you see the prompt:

Copy completed.
Copy another diskette (Y/N)?

Press **Y** to begin the process of copying Master Diskette #2.

10. You will then be prompted:

Insert SOURCE diskette
Press any key when ready

Remove Working Diskette #1 from drive A and insert Master Diskette #2. Close the drive door and press any key to continue the process.

11. When prompted to insert a TARGET diskette, remove Master Diskette #2 from the drive and insert the other blank diskette (labeled "Working Diskette #2"). Close the drive door and press any key. The contents of Master Diskette #2 will now be copied to Working Diskette #2. Put the original Master Diskettes in a safe place and use them only for making additional copies if the Working Diskettes are damaged.

Using the SETUP Program With the K286i-A

Your two-disk software package contains a program called SETUP which is used to configure the computer's CMOS RAM, a battery-powered memory which stores important system information. Your computer checks the CMOS RAM each time you boot up. To run SETUP:

1. Place Working Diskette #2 in the A drive and close the drive door. Switch on the computer and the monitor. The red LED on the drive will light and the screen prompt will ask you for the time and date.

2. Press *Enter* at both the time and date prompts. You will then see the DOS prompt (A>) appear on the screen.

3. The SETUP program is located in the \K286i subdirectory of Working Diskette #2. Let's copy it to the root directory to make it more accessible. At the DOS prompt, type:

COPY K286I\SETUP.COM
Press *Enter*.

Be sure to use a backslash between K286i and SETUP.COM. You should then see the screen message:

1 file copied

SETUP.COM is now in the root directory. **In the future, you may skip Step 3 when running SETUP.**

4. Type **SETUP** and press *Enter*. You should then see the following screen display:

CMOS RAM SETUP Utility Version x.xx
(C) Copyright 19xx by Kaypro Corporation
F1 Current time is 00:00:00
F2 Current date is 00/00/0000
F3 First diskette drive [drive A] -
F4 Second diskette drive [drive B] -
F5 First bard disk drive [drive C] -
F6 Second hard disk drive [drive D] -
F7 Display -xxxxxxxx (found xxx)
F8 Base memory size is xxxK (found xxxK)
F9 Expansion memory size is xxxK (found xxxK)
F10 80287 numeric coprocessor is (found xx coprocessor)
*** Hit F1 through F10 to change the corresponding parameter.**
*** Hit SPACE to step through and enter all parameters.**
*** Hit ESC to exit this program and return to DOS.**

The menu you see may show values following each statement. If your computer dealer performed the SETUP procedure, these values are probably correct. For the last four items, the SETUP program makes specific calls to your hardware and reports what it actually found.

Run SETUP if you need to change the time and date, when you change your installed equipment, or if you see this error message when you boot up:

Invalid configuration information - please run SETUP program
Strike the F1 key to continue

You have two choices when you run the SETUP program: You may press the space bar, which will step through the menu and prompt you for all values for F1 through F10. When you have finished entering all the values, press the *Esc* key.

OR

Select an individual value by pressing the appropriate function key. You may do this for any number of the parameters. When you have finished making changes, press the *Esc* key.

With either method, the procedure for entering changes is the same. Read the instructions below (and the instructions which appear on the screen) for detailed information on entering values for each parameter:

F1 If you press **F1**, this prompt will appear at the bottom of the screen:

> **Enter new time as HH:MM:SS in 24 hour format (e.g. 3:18:41 PM would be entered as 15:18:41), or hit ENTER to leave time unchanged.**

You must use colons (:) to separate the hours, minutes, and seconds. Enter the new time as instructed, then press the *Enter* key. If you don't want to change the time, press the *Enter* key. When you change the time, the new value will appear on the menu.

F2 If you press **F2**, you will see this prompt:

> **Enter date as MM/DD/YYYY or hit ENTER to leave unchanged.**

Use the numeric format (Example: *January 4, 1987* would be *01/04/1987*), then press *Enter*. Don't forget to include the "19" in the year. The new value should then appear on the menu. If you don't want to change the date, just press *Enter*.

F3 If you press **F3**, you will see a list of diskette drives at the bottom of the menu. To leave the present value unchanged, press *Enter*. To change values, press the number corresponding to the type of drive you have and press *Enter*. (The K286i is usually equipped with a 1.2 MB high-capacity/96 TPI drive, so press **2** to select the 1.2 MB drive.)

F4 If you have a standard K286i, you should press **0** (there is no second diskette drive) and then press *Enter*. If you have purchased and installed a second diskette drive, press the number corresponding to the appropriate type and press *Enter*. Check the documentation that came with your second diskette drive if you have any questions.

F5 If you have purchased and installed your own hard disk, you must match its specifications to one of the types on the menu. To make a selection, press the Type number corresponding to your disk's specifications and then press *Enter*.

F6 If you have purchased and installed a second physical hard disk, repeat the steps above. If you wish to leave the present value unchanged, just press *Enter*.

F7 This tells the computer what type of video adapter is installed. Type the number corresponding to the adapter you are using (your entry should match that found by SETUP) and press *Enter*. To leave the setting unchanged, just press *Enter*.

F8 You are given three choices of base memory capacity. The standard KAYPRO 286i is equipped with 640K of base memory, so most owners should press **3**, then press *Enter*. If you want to leave the present value unchanged, just press *Enter*.

F9 If you have installed an expansion memory card, press the number corresponding to the amount of expansion memory (see **Note** below) on the menu, then press *Enter*. If you have not installed any expansion memory, press **0** and then press *Enter*. To leave the setting unchanged, just press *Enter*.

Note:
The term *Expansion Memory* refers to the total amount of RAM above the 1 MB (1024 KB) boundary. If you add 2 MB (2048 KB) of memory to a K286i which already has 640 KB, your total RAM is 2688 KB. This is 1664 KB above the 1 MB boundary, so you would choose **Number 3** (1536K) which is closest to this value.

F10 If you have an 80287 numeric coprocessor, press **1**, then press *Enter*. These coprocessors are not standard equipment, so you should press **0** and then press *Enter* unless you (or your dealer) have installed an 80287. To leave the present setting unchanged, just press *Enter*.

When you have finished entering values on the SETUP menu, press *Esc*. You will then see the prompt:

> **You must re-boot the computer (CTRL-ALT-DEL) for any changes you have made with SETUP to take effect.**

If you merely turn the power switch OFF and ON, the changes you made in SETUP will be lost. When you reboot the computer, the new settings will be in effect. Turn to Chapter Five for more information on using your K286i-A.

Section B The K286i Model C

The next step depends on the amount of preparation that has been performed by your dealer. If the computer boots and displays a time-and-date prompt, the dealer has already done the formatting. If it proceeds to the Master Menu without stopping for the time-and-date prompts, the dealer has installed the complete software package. If this is the case, you may turn to Chapter Six. Refer to the information in the Power Up Test section of Chapter Two for more information.

Initializing the Hard Disk

If, in the test sequence above, you did not see either a system prompt (C:\>), a date/time prompt, or the Master Menu, follow the steps below to partition and format the hard disk.

If your computer was shipped after March 1987, it is equipped with a 40 MB hard disk. Under the MS-DOS operating system, a maximum of 32 MB can be accessed at one time. This procedure circumvents these limitations, and allows you to use a hard disk of up to 1,000 MB by *partitioning* the disk – dividing it into two logical drives (C and D). Even though you actually have only one *physical* hard disk, you will have two *logical* hard drives.

Note:
The hard disk shipped from the factory in your K286i-C has already received low-level formatting. Do not attempt to do a low-level format on the hard disk in a K286i-C.

To partition the 40 MB hard disk:

1. Insert Master Diskette #1 in the A drive, latch the drive door, and reboot using the *Ctrl, Alt,* and *Del* keys. Press the **F1** function key if prompted (this step will be eliminated when the SETUP program is properly configured). When you see the Kaypro Installation Utility menu, press the *Ctrl* key while holding down the *Break* key.

When you see the Ok prompt.

Type: SYSTEM
Press *Enter*.

If the screen displays **Terminate batch job?**

Type: Y
Press *Enter*.

2. The system prompt (**A>**) should appear on your screen.

Type: FDISK
Press *Enter*.

You should then see a menu similar to the one below:

Fixed Disk Setup Program Version x.xx
(C) Copyright Microsoft, 198x.

FDISK Options

Choose one of the following:

1. Create DOS Partition
2. Change Active Partition
3. Delete DOS Partition
4. Display Partition Data

Enter choice: [1]

Press ESC to return to DOS

3. Choose the **Create DOS Partition** men:

Type: 1
Press *Enter*

4. At this point FDISK asks if you want to use all the disk for the first MS-DOS partition. Since FDISK can't address the full capacity of your hard disk, you should:

Type: N
Press *Enter*

You should see a menu similar to this:

Total Fixed Disk Space is xxxx cylinders
Maximum available space is xxx.
Cylinders at xxx.
Enter partition size .....[xxx]

5. To create a 20MB partition, type **307** and press *Enter*. If you want a 30 MB partition, type **461** and press *Enter*. For most purposes, it is usually preferable to set the first partition at 30 MB.

6. If prompted for the starting cylinder press *Enter* to select the default value.

7. In order to boot from the C drive, the partition you've just created must be made the *active* partition. Select **Option 2** from the FDISK main menu. The menu should look similar to this:

Change Active Partition

Current Fixed Disk Drive: 1

Partition	Status	Type	Start	End	Size
1	A	DOS	0	xxx	xx
2	N	non-DOS	xxx	xxx	xx

Total disk space is xxx cylinders

Enter the number of the partition you want to make active (Select 1)

You can only have *one* active partition. To make Partition 1 active.

Type: 1
Press *Enter*

8. Press the *Esc* key, which will reboot the computer and display the KAYPRO Installation Utility menu. Answer the first two questions (type of machine and video adapter).

9. Choose the **FORMAT** option. Next you will see the hard disk installation menu

Answer the screen prompts displayed and the formatting process will begin. This will take a few minutes. When the process is finished, you will be prompted to type a volume label of up to 11 characters. Use only letters, numbers and

spaces (no special characters such as # or * are permitted) for the volume label. After typing the label, press *Enter*. At this point, the FORMAT program will terminate and return you to the INSTALL program menu.

You should now be able to boot from the hard disk. Remove the diskette from the A drive and simultaneously press the *Ctrl*, *Alt*, and *Del* keys. The screen should clear and display a system prompt: **C>**. (You may be prompted to press the **F1** key before the system prompt can be displayed.)

Software Installation

Software installation for a K286i-C consists of installing the software bundle from the Master Diskettes.

Follow these steps to complete the installation:

1. Start the computer with Master Diskette #1 in Drive A. The computer will automatically load the INSTALL program, which is written in GWBASIC.

Note:
During the installation process, if you are prompted to press the F1 key and run the SETUP program, press the **F1** function key to continue. You will run SETUP after installing the complete software package.

---

2. You will be prompted to respond to questions about your machine. Choose the **286i** option and answer **YES** if you have an EGA video adapter.

3. When you see the INSTALL menu, select the option to install software programs on the hard disk. Follow the screen prompts, changing diskettes as necessary until the process is complete. If you insert the wrong diskette, the INSTALL program will correct you before continuing.

5. When the installation process is completed, choose the EXIT option from the INSTALL menu and follow the screen prompts to leave the INSTALL program and return to the DOS (A>) prompt.

6. To test for proper installation, remove the diskette from Drive A and reboot the computer (hold down the *Ctrl*, *Alt*, and *Del* keys at the same time).

8. If everything is working properly, the computer will make a beeping sound and the screen will clear. The computer will then execute a series of commands and display the Master Menu.

Using SpeedStor to Create a Second Partition

Using FDISK, you created an MS-DOS partition of 20 or 30MB. This section will show you how to create a second partition using the SpeedStor PARTED program.

The instructions below explain how to create a second MS-DOS compatible partition of either 10 or 20 megabytes. If you choose to divide the drive into more partitions or a different configuration, refer to the PARTED section of the SpeedStor manual. If you want a partition for a different operating system, consult the documentation for that particular system.

1. Place your SpeedStor diskette in the A drive.

2. Log onto the A drive and at the system prompt:

   Type: PARTED
   Press *Enter*

3. Use the cursor keys to select **Create** from the menu. Then press *Enter*.

4. Select either **DOScompatible** or **DOSextension** from the menu and press *Enter*. Most users should select DOScompatible. The DOSextension option allows control of the file structure of the partition and is recommended only for advanced users. (Consult the SpeedStor Manual for details.)

5. Select **Largest** from the menu and press *Enter*. This will create the largest partition possible given the amount of space remaining on the drive.

6. Select **Format** from the menu and press *Enter*. Select **(2)Two** and press *Enter* to format the second partition. If the screen warns you about data loss on the partition, select **Yes** and press *Enter* to continue.

7. Select **Quit** and press *Enter* to return to the system prompt.

8. Next, you must create (or add to) a CONFIG.SYS file and install the device driver used to recognize the second partition (drive D). If either the device driver (HARDRIVE.SYS) or the line in the CONFIG.SYS file which calls it (DEVICE = HARDRIVE.SYS) are missing, you will be unable to access the D drive. From the A prompt:

   Type: ADDEVICE
   Press *Enter*

9. When the ADDEVICE program is finished, remove the SpeedStor diskette and reboot using the *Ctrl-Alt-Del* method described above. The Master Menu should now be displayed on the screen. Press the *Esc* key to leave the Master Menu and return to the DOS prompt. To check for the D: partition:

10. Type: **D:** The system prompt should now read **D:>** You now have two logical drives: C and D.

The Final Step—Running SETUP

Your software package contains a program called SETUP which is used to configure the computer's CMOS RAM, a battery-powered memory which stores important system information and configures the computer each time you boot up.

During the installation procedure, the SETUP program was copied into the UTILITY subdirectory of your hard disk. SETUP is not accessible from the Master Menu on the K286i-C. To run SETUP from the Master Menu, press *Esc* to return to the DOS prompt (you should see C:\MAIN>). From the DOS prompt, type **SETUP**.

You should then see the menu below:

CMOS RAM SETUP Utility Version x.xx
(C) Copyright 19xx by Kaypro Corporation

F1 Current time is 00:00:00	
F2 Current date is 00/00/0000	
F3 First diskette drive	**[drive A] -**
F4 Second diskette drive	**[drive B] -**
F5 First hard disk drive	**[drive C] -**
F6 Second hard disk drive	**[drive D] -**
F7 Display -xxxxxxxx	**(found xxx)**
F8 Base memory size is xxxK	**(found xxxK)**
F9 Expansion memory size is xxxK	**(found xxxK)**
F10 80287 numeric coprocessor is	**(found xx coprocessor)**

*** Hit F1 through F10 to change the corresponding parameter.**
*** Hit SPACE to step through and enter all parameters.**
*** Hit ESC to exit this program and return to DOS.**

The menu you see may show values following each statement. If your computer dealer performed the SETUP procedure, these values are probably correct. For the last four items, the SETUP program makes specific calls to your hardware and reports what it actually found.

Run SETUP if you need to change the time or date, when you change installed equipment, or if you get the error message shown below:

> **Invalid configuration information - please run SETUP program. Strike the F1 key to continue**

You have two choices when you run the SETUP program: You may press the space bar, which will step through the menu and prompt you for all values for F1 through F10.

You may also select an individual parameter by pressing the appropriate function key. You may do this for any number of the parameters. When you have finished making changes, press the *Esc* key.

With either method, the procedure for entering changes is the same. Read the instructions below (and the instructions which appear on the screen) for detailed information on entering values for each parameter.

The parameters are as follows:

F1 If you press **F1**, this prompt will appear at the bottom of the screen:

> **Enter new time as HH:MM:SS in 24 hour format (e.g.3:18:41 PM would be entered as 15:18:41), or hit ENTER to leave time unchanged.**

You must use colons (:) to separate the hours, minutes, and seconds. Enter the new time as instructed, then press the *Enter* key. If you don't want to change the time, press the *Enter* key. If you have changed the time, the new value should appear on the menu.

F2 If you press **F2**, you will see this prompt:

> **Enter date as MM/DD/YYYY or hit ENTER to leave unchanged.**

Use the numeric format (Example: January 4, 1987 would be *01/04/1987*), then press *Enter*. Don't forget to include the "19" in the year. The new value should then appear on the menu. If you don't want to change the date, just press *Enter*.

F3 If you press **F3**, you will see a list of diskette drives at the bottom of the menu. To leave the present value unchanged, press *Enter*. To change values, press the number corresponding to the type of drive you have and press *Enter*. (The K286i is equipped with a 1.2 MB high-capacity/96 TPI drive, so press 2.)

F4 If you have a standard K286i, you should press **0** (there is no second diskette drive) and then press *Enter*. If you have purchased and installed a second diskette drive, press the number corresponding to the appropriate type and press *Enter* (check the documentation that came with your second diskette drive if you have any questions).

F5 As of this writing, the currently-shipped hard disk is a Type 40. Check your documentation package for updates on these specifications.

F6 If you have purchased and installed a second physical hard disk, check with your dealer for the proper type. If you wish to leave the present value unchanged, press *Enter*.

F7 This tells the computer what type of video adapter is installed. Type the number corresponding to the adapter you are using (your entry should match that found by SETUP) and press Enter. To leave the setting unchanged, just press Enter.

F8 You are given three choices of base memory capacity. The standard KAYPRO 286i is equipped with 640K of base memory, so most owners should press **3**, then press *Enter*. If you want to leave the present value unchanged, just press *Enter*.

F9 If you have installed an expansion memory card, press the number corresponding to the amount of expansion memory on the menu, then press *Enter*. If you have not installed any expansion memory, press **0** and then press *Enter*. To leave the setting unchanged, just press *Enter*.

Note:
The term *Expansion Memory* refers to the total amount of RAM above the 1 MB (1024 KB) boundary. If you add 2 MB (2048 KB) of memory to a K286i which already has 640 KB, your total RAM is 2688 KB. This is 1664 KB above the 1 MB boundary, so you would choose **Number 3** (1536K) which is closest to this value.

F10 If you have an 80287 numeric coprocessor, press **1**, then press *Enter*. These coprocessors are not standard equipment, so you should press **0** and then press *Enter* unless you (or your dealer) have installed an 80287. To leave the present setting unchanged, just press *Enter*.

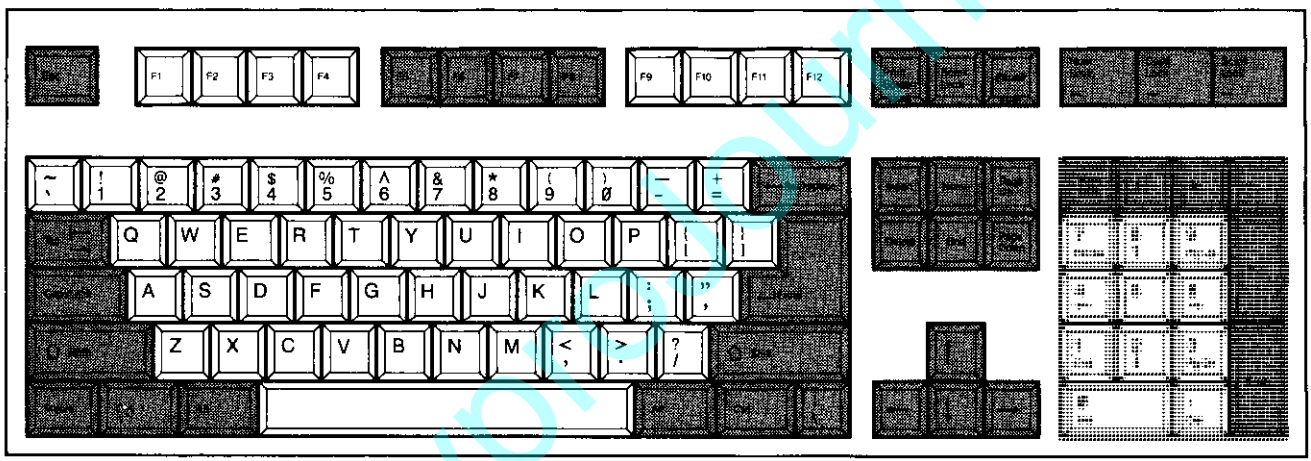
When you have finished entering values on the SETUP menu, press *Esc*. You will then see the prompt:

> **You must re-boot the computer (CTRL-ALT-DEL) for any changes you have made with SETUP to take effect.**

If you merely turn the computer OFF and ON, the changes you made in SETUP will be lost. Reboot the computer now for the new settings to take effect.

Your computer is now ready for operation. If you need further information about using the K286i, please turn to Chapter Six.

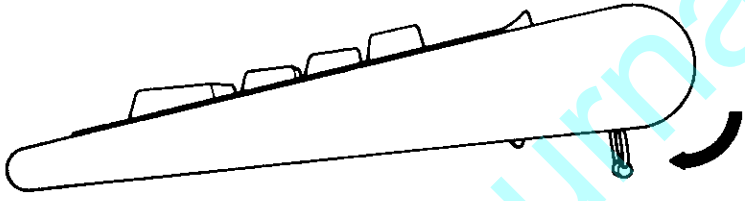
Chapter Four
Computer Basics



Chapter Four
Computer Basics

The Keyboard

The computer keyboard is a 102 key layout similar to that of the KAYPRO 386. The typing angle can be adjusted by moving the fold-down legs on the bottom.



The keyboard has a bank of twelve programmable function keys above the main typewriter area and a numeric keypad on the right. The keypad has two modes of operation--*numeric* and *function*. Both modes are described in the "Keypad" section.

Programmable Function Keys

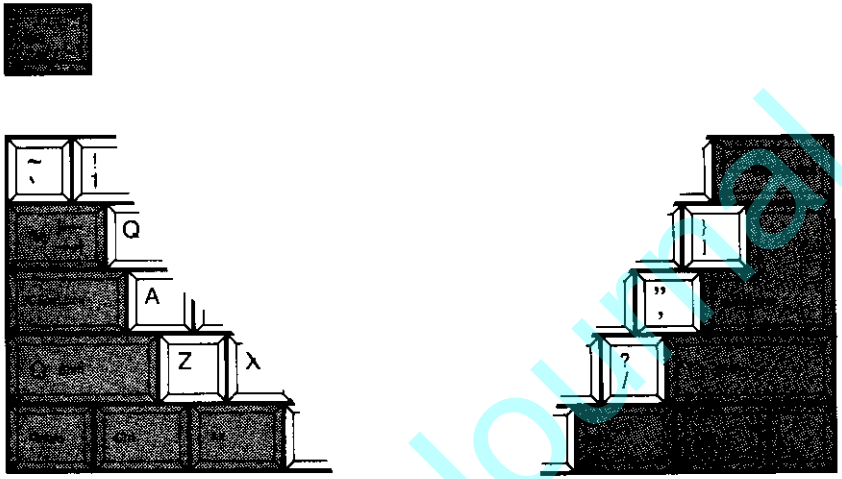
The keys labeled **F1** through **F12** are multi-purpose programmable function keys. The function of each of these keys is determined by the program in use.

Typewriter Area

The keys in the center area of the keyboard are similar to those of a typewriter. However, there are a few different keys that you should become familiar with.

The following keys perform special functions:

Esc: This key (Escape) is often used to cancel some action or to escape from an undesired activity.



Tab: This key moves (tabs) the cursor horizontally multiple spaces. The number of spaces depends upon the program in use. In some programs, when used with the Shift key, it will tab the cursor backwards.

Caps Lock: This key behaves like a typewriter's Shift Lock key by converting alphabetic characters from lower case to upper case. Unlike a typewriter Shift Lock, this key does not convert punctuation or number keys to their shifted position. The Shift key temporarily reverses the state of Caps Lock. That is, when the Caps Lock is off, the Shift key changes letter keys to upper case. When the Caps Lock is on, the Shift key changes letter keys to lower case. Each time you press the Caps Lock key, it will change from one mode to the other.

Shift: This key operates much like a typewriter's shift key, and it does not lock into place. In addition to converting the alphabetic keys, number keys and punctuation keys to their shifted function, it also temporarily reverses the state of the Num Lock key. That is, when the Num Lock is off, the Shift key puts the keypad in numeric mode, and when Num Lock is on, the Shift key puts the keypad characters into function mode.

Ctrl: (Control) This key is used in conjunction with other keys to generate control codes. Like the Shift key, the Ctrl key must be held down while the next key is pressed. For example: to stop a command, press the Ctrl and Break keys.

Macro: This key has no function on the K286i.

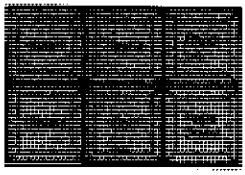
Alt: This key is used with one or more other keys to generate an alternate function of the other key(s). It operates like the Shift and Ctrl keys in that it must be held down while the other key(s) is (are) being pressed.

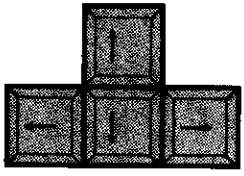
Backspace: This key moves the cursor from right to left (backspaces). Some programs erase the characters as the cursor moves.

Enter: This key tells the computer to execute a command. It also works like a carriage return by moving the cursor to the start of a new line.

Miscellaneous Function Keys

The miscellaneous function keys shown below may perform different functions depending on the program being used. Consult the user's guide of the particular program to determine the specific use of each key.





Print Screen/SysRq: Sends the current screen display to a parallel printer. When used with the Ctrl key, it echos the screen display to the parallel printer until you cancel this function by pressing the Ctrl and Print Screen keys again, or reset the computer. The SysRq key has no meaning at this time.

Scroll Lock: This key is used by some programs to effect display scrolling. MS-DOS does not use this function.

Pause/Break: This key acts to pause the scrolling of text or the operation of a program. Press any other key to continue. This key can be used with the Ctrl key to abort a program.

Insert: Allows you to insert characters in a line of text. In some programs it may toggle between insert and overwrite mode.

Delete: Deletes the character under the cursor or the character to the left of the cursor depending upon the program in use.

Home: Moves the cursor to the top left of the screen. In some programs, it moves the cursor to the beginning of a line.

End: Moves the cursor to the last character on a line or to the bottom right of the screen. In some programs, it moves the cursor to the end of a line.

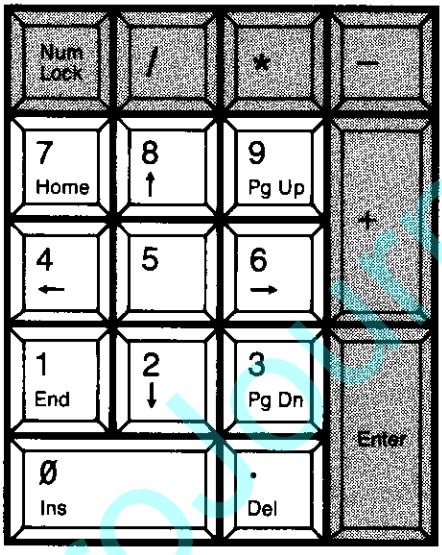
Page Up: Displays the previous page of text.

Page Down: Displays the next page of text.

The four *arrow keys* move the cursor in the direction indicated by the arrow on each key.

The Keypad

The calculator-style keypad includes mathematical function keys and number keys which double as cursor movement keys. The cursor movement functions of the number keys are duplicated in the bank of keys to the left of the keypad.



The *Num Lock* key toggles the numeric keys on the keypad between numeric and function mode. Each time you press this key, the computer switches from one mode to the other. The Shift key temporarily reverses the Num Lock mode. That is, when the Num Lock is off, the Shift key puts the keypad in numeric mode, and when Num Lock is on, the Shift key puts the keypad characters into function mode. When operated in function mode, the numeric keys affect cursor movement. The program in use usually determines the function of each key.

The Keypad Keys in Function Mode

Ins: Allows you to insert characters in a line of text. In some programs it may toggle between insert and overwrite mode.

Del: Deletes the character under the cursor or the character to the left of the cursor depending upon the program in use.

Home: Moves the cursor to the top left of the screen or to the first character on a line.

End: Moves the cursor to the last character on a line or to the bottom right of the screen.

PgUp: Displays the previous page of text.

PgDn: Displays the next page of text.

Arrows: (2, 4, 6, & 8 keys) The arrow on each of these keys move the cursor in the direction indicated by that arrow.

Diskettes

The K286i uses 5.25 inch, double-sided, soft-sector diskettes as a removable form of data storage. See the section "Two Types of Diskettes" for more details.

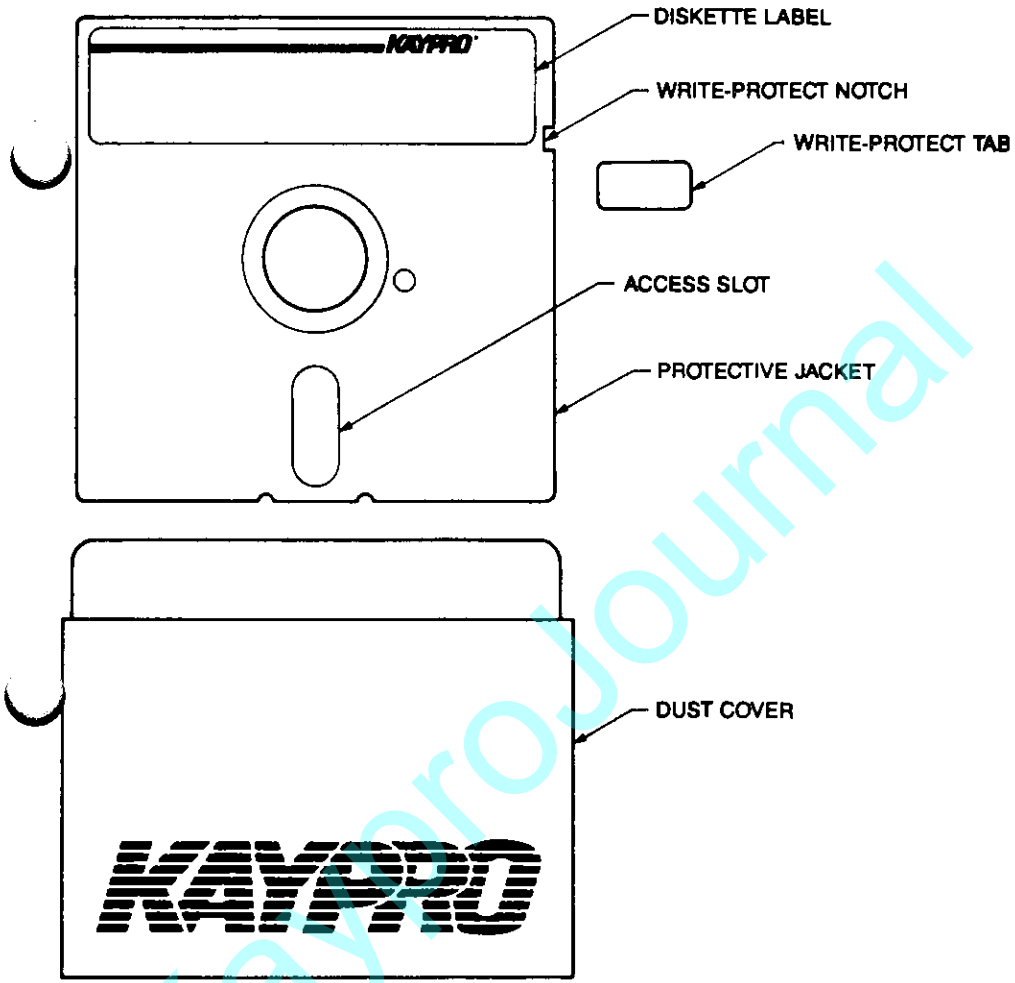
Information is stored magnetically on the oxide coating of the diskette, which is permanently sealed inside a protective envelope. This oxide coating has invisible tracks along which magnetic pulses are recorded. Computers use these pulses to store information.

Diskettes can be formatted for many different types of computers. No information can be stored on a diskette until the diskette has been formatted. Formatting magnetizes the diskette and organizes it into tracks and sectors.

Two Types of Diskettes: 1.2 MB and 360K

The K286i is capable of using either 1.2 Megabyte High Capacity or 360 Kilobyte double-sided, double-density diskettes. The 1.2 Megabyte diskettes are capable of storing almost four times as much information as the 360 Kilobyte diskettes, and can be read by the diskette drives on the K286i and most other "PC/AT-Compatible" computers. They cannot, however, be read by the disk drives on the KAYPRO PC, PC-30, or other "PC-Compatible" computers which can read only 360K diskettes.

The two types of diskettes look identical. For this reason, manufacturers usually mark "1.2MB" or "96 TPI" on the labels of the high-capacity diskettes, and "DS/DD" or "48 TPI" on the labels of 360K diskettes. Formatting procedures for each type are different. These procedures are outlined more carefully in the "Getting Started" chapters later in this manual.



Handling Diskettes

Here are a few simple guidelines for handling and using diskettes. Chemicals from a fingerprint on the exposed surface of a diskette can destroy the product of an entire day's work. Therefore:

- Always handle diskettes by the label or the protective jacket.
- Do not touch the exposed surface of a diskette.
- Do not bend diskettes.

Storing Diskettes

Keep diskettes in their dust covers when not in use. Store them in a clean, dry, cool place. Do not store them right next to your monitor, or near other sources of magnetic fields. Don't store them near corrosive chemicals or expose them to excesssive smoke.

Backup Diskettes

Despite your best efforts, sooner or later you may accidentally damage one of your diskettes. It is important to make backup copies so that valuable data won't be lost. As you create and change files, make it a practice to save your information to disk. The more valuable your information, the more often you should save it. In a business environment, files should be backed up daily.

Protecting Data

There is a square notch on one side of the diskette jacket called the write-protect notch. If this notch is covered, information can only be read from the diskette. You cannot make changes or store new information on a diskette that has the write-protect notch covered. To ensure that you do not accidentally erase stored information, cover the notch with a write-protect tab.

Saving Data

Making frequent backups of your work will safeguard against loss in the event of a power failure or computer malfunction. Remember, any information in the computer's memory is lost if the power fails.

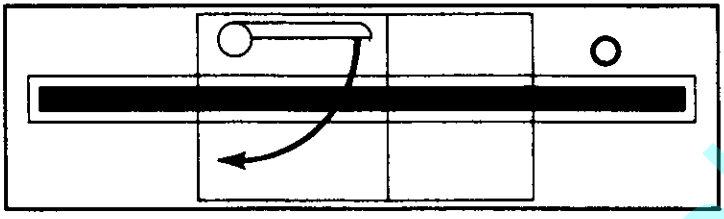
Labeling Diskettes

Label all diskettes that contain information. Use only stick-on adhesive labels. Write on the label first, then apply it to your diskette. If you must write on a label which is already in place, use only a soft, felt-tip pen. Pencils or ballpoint pens can damage the oxide coating on the diskettes.

Removing Diskettes From the Drives

Do not remove a diskette from the drive when the red drive light is on. Always remove diskettes from drives before turning off the computer. Open the drive by turning the lever horizontal as shown. Close it by turning the lever

down. The computer cannot read disks when the drive is open, and will give an error message if you attempt to do so.



The Monochrome Monitor

The Monochrome Monitor displays all text in one color: green. It displays twenty-five rows and eighty columns of high resolution text. For more information on the video characteristics of your monitor, see Chapter Nine.

Computer Maintenance

In normal operation your computer should need very little maintenance. With occasional cleaning, you can keep your K286i in top shape. It's important to keep the computer and diskettes dust-free. The computer can be cleaned with a damp, lint-free cloth. A mild dishwashing detergent can be used if necessary. Do not allow water (or any liquid) to come in contact the electronic circuitry.

The part of the drive that transfers information to and from the diskette is called the *drive head*. As the drive head passes over the diskette, it can pick up dust and debris. The drive heads should be cleaned occasionally to remove this. If you use your computer daily, cleaning the heads once every few months is a good idea. Drive head cleaning kits are available from your KAYPRO dealer or at any store selling computer accessories.

Operating Systems and Commands

Computers do not understand English. They respond to specific instructions in groups of ones and zeroes, called *binary language*. Operating systems like MS-DOS (Microsoft Disk Operating System) were developed to make it easier for you to use your computer. MS-DOS takes your commands from the keyboard and translates them into binary language.

You may enter commands in any combination of upper case and lower case. In this manual all the commands are shown in upper case. To enter an MS-DOS command, type the command sequence, check to see if it is correct, then execute the command by pressing *Enter*.

Two Types of Commands: Internal and External

An *internal* command is one you have at your disposal whenever the cursor is at the system prompt. These commands are automatically loaded into memory along with the operating system when the computer is switched on. The **DIR** command (more about this in Chapter Six) is an internal command.

An *external* command is an MS-DOS program that must be loaded into memory from disk before it can be run. The FORMAT commmand is an example of an external command. MS-DOS commands will be covered in more detail later in this manual.

When you enter an external command at the DOS prompt (either **A>** or **C>**), MS-DOS looks on the disk for the program you have designated, loads it into memory and runs it. The program is usually found in a file with an EXE or COM extension. If the file is not found on the disk, MS-DOS will respond with the message:

Bad command or file name.

The System (DOS) Prompt

The system prompt, commonly called the *DOS prompt*, indicates that MS-DOS is loaded into memory and waiting for your commands. It also indicates that you are interacting directly with the operating system and not using an application software package.

In its simplest form, the system prompt consists of the name of the default drive and a *greater than* (**>**) sign. If you have a computer with two diskette drives, your prompt will be either **A>** or **B>**. If you have a hard disk, your prompt will usually be **C>**.

Later in this manual, you will learn how to change the system prompt. The short flashing line right next to the system prompt is called a cursor. It shows you where the next character you type will appear.

The Default Drive

Every drive in an MS-DOS system has a name consisting of one letter. On a two-diskette-drive unit, the upper drive is called drive **A**, while the lower drive is drive **B**. On a hard disk unit the hard disk is called drive C and the upper diskette drive is drive **A**.

When specifying a drive to MS-DOS (and most software packages), the letter should always be followed by a colon (Example: C:). If you omit the colon, MS-DOS won't recognize the letter as a drive specification.

The *default drive* is the drive where MS-DOS automatically looks for files if no other drive is specified. On a two-diskette-drive machine, the computer automatically sets A as the default drive every time you start the computer. When a hard disk is installed, the computer looks to drive C unless you started the computer with a diskette in drive A.

Example: If you have a hard disk (C), and type the command **FORMAT**, MS-DOS looks on drive C (the default drive) for the file FORMAT.EXE. If the file was on drive A, you would have to type **A:FORMAT** to tell MS-DOS that the file was on the A drive. Why? Because the MS-DOS system only looks on the *default* drive for files unless it is told otherwise.

To change the default drive, type the letter of the new drive (at the system (DOS) prompt) followed by a colon and press *Enter*. MS-DOS expects to find a diskette in the drive. If there is no diskette in the designated drive (or if the drive is not properly closed), you will see an error message:

Not ready error reading drive x
Abort, Retry, Ignore?

When you have corrected the situation, respond to the question with **R** for *Retry*. If you type the name of a drive that does not exist, this error message will appear:

Bad Command or File Name

Understanding Files

In computer terms, a *file* is data which is stored on a magnetic surface (diskette or hard disk), and given a specific name. All information in your computer is stored in the form of files.

A file is similar to a folder in a filing cabinet; each stores information for easy reference. Each file has a *filename,* just like the name on the tab of a folder in a file cabinet. Files usually contain one of these three types of information: text, data, or programs. *Text* files generally contain letters, notes, manuscripts, and other standard written data. *Data* files contain information like customer mailing lists, accounting records, and test records from scientific research. *Program* files contain application programs, like a word processor or spreadsheet. The information in a program file is normally stored in binary form used by the computer.

File Specifications and Naming Files

Under MS-DOS, files are referred to by their file specifications, sometimes called *filespecs*. A filespec consists of an optional drive letter (not needed if the file is on the default drive), a file name of one to eight characters, and an (optional) extension up to three characters in length. Examples:

A:FILENAME.EXT
C:MYFILE

If included, the drive specification consists of a drive letter separated from the filename by a colon. The drive specification tells MS-DOS which drive contains the diskette where the file is located. If the drive specification is omitted, MS-DOS assumes the file is located on the default drive.

If a file name includes an extension, the extension is separated from the file name by a period (.). These file extensions have special meanings:

- **BAT**ch file. A *batch* file is a text file that contains a list of MS-DOS commands. For more information about batch files consult the *MS-DOS User's Guide*.
- **COM**mand file. This is a program file.
- **EXE**cutable file. This is also a program file. The only difference between .COM and .EXE files is internal to MS-DOS. They have the same external characteristics.
- **SYS**tem file. A *system* file is either a binary file or a text file that contains a list of MS-DOS instructions. For more information about system files consult the *MS-DOS User's Guide.*

Program files with a .COM or an .EXE extension are run directly by the user. Any .COM, .EXE, or .BAT file can be run by typing its file name without the extension (Example: FORMAT) at the MS-DOS system prompt.

With the exception of **.COM**, **.EXE**, and **.SYS**, you are free to use any letter combination as an extension. The **.BAT** extension, however, should be reserved for *batch files* (more on batch files in the *MS-DOS User's Guide*). It is standard practice to use extensions to indicate the type of file (.TXT for text files, .BAS for BASIC programs, .BAK for backup files, etc.).

Reserved Characters and File Names

The following characters have special meaning to the operating system and should not be used in a file name:

Period (.)
Colon (:)
Plus Sign (+)
Less than sign (<)
Slash (/)
Left Bracket (t)
Bar (|)
Space ( )
Comma (,)
Semicolon (;)
Equal Sign (=)
Greater than sign (>)
Backslash (\)
RightBracket (])
Quotes (" ")

Hardware devices on your computer like the screen, are accessed through a *device name*. The following MS-DOS device names are reserved for the devices indicated and cannot be used to name files:

DEVICE	NAME
Console(keyboard/screen)	CON
First serial port	AUX or COM1
Second serial port	COM2
First printer port	LPT1 or PRN
Second/third printer port	LPT2, LPT3
Test Device	NUL

For more information on device names, see the *MS-DOS User's Guide*.

Chapter Five
Getting Started With Diskettes

Chapter Five
Getting Started With Diskettes

Using the Computer

Now that you have installed your hardware and copied your Master Diskettes to *Working Diskettes*, you're ready to start learning the MS-DOS operating system. The following instructions will get you started. Consult the *MS-DOS User's Guide* and Chapter Seven of this manual for a more detailed explanation of the commands in this chapter.

The First Step--Turning On the Computer

1. The diskette drive is called the *A drive*. If you have two diskette drives, the lower drive is the B drive. Open drive A and insert **Working Diskette #1** that you created in Chapter 3. Be sure the label is up and the access slot is forward. Close the drive.

2. Turn on the video monitor.

3. The power switch is located on the right side of the computer. Move it to the ON (upper) position.

When the computer is turned on, it follows a procedure permanently stored in ROM (Read Only Memory). It tells the computer to check RAM (Random Access Memory), activate the A drive, read the diskette, locate the operating system, and load it into memory. The process of reading the diskette and loading the operating system into RAM is known as *booting up*. A series of numbers will appear in the upper left-hand corner of the screen. These numbers indicate that the computer is checking RAM. After the computer checks RAM, it looks for a diskette in drive A. If a diskette is not inserted before the computer completes the memory check, the following message may appear:

Disk Boot Failure

If this happens, insert the MS-DOS diskette, close the drive door, hold down the *Ctrl* key, and press the *Alt* and *Del* keys. This is known as *rebooting* and will reset the computer.

Setting the Date and Time

Once you have rebooted, the screen will prompt you for the date and time. The following message asks for the system date and time, which is stored and updated by the K286i's internal clock.

Current date is Tue 1-01-1980
Enter new date:_

MS-DOS uses this information to keep track of your files. Each time you create or update a file it's marked with the current date. Type in the current date, using hyphens or slashes to separate the numbers. You do not need to include the "19" in the year. For example, at the prompt you could type either:

1-22-87

Or:

1/22/87

and press *Enter*.

The number of days in months and leap years are changed automatically. If you type the date incorrectly, MS-DOS displays an error message indicating an invalid date. It will then ask you to try again. After the date is entered, the prompt for the time will appear:

Current time is 00:00
Enter new time: _

Type the correct time (using colons to separate the hour and minutes) and press *Enter*. Use the 24-hour format. To find the correct time in the afternoon, add twelve hours to the present time. (Example: 1:00 PM would be 13:00 in 24 hour format.) You need not enter the seconds or hundredths of seconds.

If you don't want to change the date or time, press the *Enter* key at each prompt. This will bypass the date prompt and allow you to continue without making changes. The computer will use the date already in memory, and your files will be marked with that date.

Rebooting The System

Avoid resetting the computer by turning off the power switch. If you need to reset the computer, you should use the method below. This is called *rebooting*. When the computer is rebooted, it will repeat most of the startup procedures that occurred when the power switch was first turned on. Rebooting can be a useful procedure under certain circumstances, particularly when the keyboard will not transmit commands to the computer. Rebooting will erase everything in memory; any work not saved to disk will be lost. If possible, save your work before you reboot the computer.
Reboot the computer by simultaneously pressing the *Ctrl*, *Alt*, and *Del* keys.

CAUTION:
When you reboot, everything that is currently in RAM will be erased.

Formatting Diskettes

As you learned in Chapter Four, MS-DOS cannot use a diskette until it has been formatted. The FORMAT program prepares diskettes to receive data.

FORMAT also checks for defective tracks on the diskette. No information can be stored on a defective track. If a diskette is badly damaged, it may be impossible to format. If the computer is unable to format a diskette, it will abort the process and display an error message. Faulty diskettes should be discarded or returned to the dealer.

CAUTION:
Formatting will erase any information previously stored on the diskette. If it contains important files, they should be copied to another diskette before reformatting.

Two Types of Diskettes: 1.2 MB and 360K

The K286i is capable of using either 1.2 Megabyte High Capacity or 360 Kilobyte diskettes. If you want to transfer your data to a computer which reads only 360K diskettes (for example, the KAYPRO PC or PC-30), you should use the 360K diskettes. The KAYPRO PC and PC-30 cannot read 1.2 Megabyte High Capacity diskettes.

Formatting diskettes: 360K vs 1.2MB
Note: MS-DOS requires slightly different procedures for formatting the two types of diskettes. When formatting a 360K diskette in a high capacity drive (such as in the K286i), you need to add "/4" to the basic FORMAT command. We have placed reminders to that effect in the different sections that follow. All other directions and options are the same.

Formatting With a Single-Diskette-Drive System

This section is for users who have a system with only one diskette drive. To begin the format procedure you will need at least one blank diskette and your MS-DOS system diskette.

1. Insert your working copy of the MS-DOS system diskette in drive A, close the drive, and reboot the computer. You should now see the A > system prompt on your screen.

2. Type **FORMAT A:** (or **FORMAT A:/4** if you are formatting a 360K diskette), then press *Enter*. You will then see the prompt

Insert new diskette for drive A: and strike ENTER when ready.

3. Remove the MS-DOS system diskette and replace it with the diskette you wish to format. Close the drive and press *Enter*.

4. The formatting process will begin. The screen will display

Head: x Cylinder: x

5.. When the process is finished, you will see:

Format Complete

6. When the formatting procedure is finished, you'll see:

Format another (Y/N)?

If you want to format another diskette, press **Y**, then press *Enter*, and follow the screen prompts. If not, press **N** then press *Enter*.

7. When you are finished, remove the newly-formatted diskette from the drive. The disk is now ready to store information.

Formatting With a Two-Diskette-Drive System

This section is for users who have only two diskette drives (no hard disk). To begin, you will need at least one blank diskette and your MS-DOS system diskette.

1. Insert your working copy of the MS-DOS system diskette into drive A, close the drive, and reboot the computer. You should now see the A> system prompt on your screen.

2. Insert a blank diskette into the lower drive (drive B). Carefully slide the diskette into the drive with the label up, and the access slot forward. Close the drive.

3. To format a diskette in the B drive, type: **FORMAT B:** (or **FORMAT B:/4** if you are formatting a 360K diskette), then press *Enter*:.

Caution:
It is important to specify drive **B**. If you omit the **"B:"** in "Format B:," you will erase everything on your MS-DOS diskette. To eliminate this possibility, put a write-protect tab on your MS-DOS system diskette.

Once you have executed the above command, the following message should be displayed on the screen.

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

4. Press *Enter*. During the formatting procedure the screen will display:

Head: x Cylinder: x

When the formatting process is complete, the following message will be displayed:

Format complete

In addition, there will be information on the amount of disk space available, and the following prompt:

Format another? (y/n)

5. If you want to format another diskette, type: Y and press *Enter*. The screen will then display the same message as in step 3. Remove the newly-formatted diskette from drive B and insert another blank diskette. Repeat steps 4 and 5 for as many diskettes as you need.

6. If you do not wish to format any other blank diskettes, type N and press *Enter*, then remove the diskettes.

Adding MS-DOS to the Diskette While Formatting

When formatting, you have the option of adding the MS-DOS operating system to the diskette. This will create a *boot*, or *system* disk. Adding MS-DOS to a formatted diskette allows you to load and run programs directly without the inconvenience of having to use a separate MS-DOS diskette to start the computer each time you run the program.

If you start or reset the computer with a system diskette in the drive, the computer will reboot. The KAYPRO 286i will read the system disk and load the operating system into memory (RAM).

To add MS-DOS while formatting a 1.2 Megabyte High Capacity diskette:

1. Insert the diskette to be formatted into the proper drive.

2 At the system prompt, type **FORMAT A:/S** (or **FORMAT B:/S** if you are using the B drive).

To add MS-DOS while formatting a 360K diskette:

1. Insert the diskette to be formatted into the proper drive.

2. At the system prompt, type **FORMAT A:/4/S** (or **FORMAT B:/4/S** if you are using the B drive).

The /S is called a *switch*--a parameter which invokes an optional command feature. The /S switch tells MS-DOS to add the operating system to the diskette after the formatting procedure is completed.

Note:
Adding the MS-DOS system files to the diskette uses almost 70 kilobytes of storage space. Consider the amount of space you will need on a diskette before adding the system. There may not be room left for all the program files.

Assigning a Volume Name to a Diskette

You can also assign a volume name to a diskette while formatting by using the /V switch. A volume name acts like a name tag and is a convenient way to keep track of your diskettes.

If you type: **FORMAT B:/S/V** and press *Enter*, MS-DOS will add both a volume name and the operating system to the diskette in drive B. You can do the same thing with a 360K diskette by placing the /4 parameter in front of the other switches. (Example: **FORMAT A:/4/S/V**)

The instructions for formatting are the same as before. When the formatting is complete, you will be asked to type in a volume name for the diskette. You may use up to 11 letters and numbers in the volume name. Do not use special characters or blank spaces.

Listing Files with DIR

The DIR command lists files, their size in bytes, and the time and date they were last altered. With your working copy of MS-DOS in drive A and a newly-formatted diskette in drive B, boot your computer and at the system prompt:

Type: DIR
Press *Enter*

A list of information for the files on drive A will be displayed. If there is more than one screenful of data, it will scroll by without pausing. To pause the listing when the screen is full:

Type: DIR/P
Press *Enter*

The **/P** switch causes the directory listing to pause when the screen is full and wait for you to tell it to continue. You may not need to know times, dates or file size. If you want to see a listing of filenames all on one screen, use a different switch:

Type: DIR/W
Press *Enter*

The DIR command can be directed to a different drive. You can view a directory of the files on the B drive by typing the following command at the A> system prompt:

Type: DIR B:
Press *Enter*

If you formatted a diskette in the B drive and created a system disk, you will see one file listed, COMMAND.COM. If the diskette in drive B is not a system disk, you will see the message:

File Not Found.

Note:
You can use either form: **DIR/P B:** or **DIR B:/P**; they both work the same way. This also applies to the **DIR/W** command.

Copying Files with COPY

The COPY command copies files to a diskette. When you need more than one copy of a file, use COPY to create an exact duplicate. The COPY command looks like this:

COPY A:MYFILE B:YOURFILE

Where A:MYFILE is the file you want to copy, and B:YOURFILE is the file you want to create. See Chapter Four and your *MS-DOS User's Guide* for a more complete definition of file specifications.

If You Have Two Diskette Drives

Let's copy the file CONFIG.SYS from your MS-DOS diskette in drive A to the diskette in drive B. From the **A>** system prompt:

Type: COPY A:CONFIG.SYS B:CONFIG.SYS /V
Press *Enter*

You will see the message:

1 File(s) Copied

The /V tells MS-DOS to *verify* the copy--to tell you of any errors while copying. You can change the filename as you copy the file. To copy the file CONFIG.SYS to the B drive and rename it NEWFIG.SYS:

Type: COPY A:CONFIG.SYS B:NEWFIG.SYS /V
Press *Enter*

You will then see the message

1 File(s) Copied

and NEWFIG.SYS will be on the diskette in the B drive. It will be an exact copy of CONFIG.SYS in every respect, except that it's named NEWFIG.SYS.

There are some restrictions to the COPY command:

1. You cannot copy a file onto itself (have two files with the same name on the same disk) and

2. You cannot copy system or hidden files. We'll be looking at more options of COPY in Chapter Seven.

Copying A Diskette with DISKCOPY

Unlike COPY, which copies files one by one, DISKCOPY copies the entire diskette by making an exact image of the original. The format for the DISKCOPY command is:

DISKCOPY A: B:

where A is the letter of the drive you want to copy *from*, and B is the letter of the drive you want to copy *to*. In MS-DOS terms A is the *Source* and B is the *Target*.

If You Have Two Diskette Drives

To use DISKCOPY:

1. Place your working copy of your MS-DOS diskette in Drive A. Use the DIR command to be certain it contains the file DISKCOPY. Versions of MS-DOS earlier than 3.0 use DISKCOPY.COM while later versions use DISKCOPY.EXE.

2. Insert a blank diskette into the lower drive (drive B). Close the drive.

3. At the (DOS) prompt (A>), type:

DISKCOPY A: B:
Press *Enter*.

The following messages should appear on the screen.

Insert Target Diskette In Drive B:
Strike Any Key When Ready

DISKCOPY tells the computer to copy everything on the diskette in drive A to the diskette in drive B. If you've followed these instructions this far, the two diskettes are already in place. When you press any key, DISKCOPY will copy the contents of the diskette in drive A to the diskette in drive B. While you're waiting, make a label for your new copy.

4. When the copy process is complete, the following message will be displayed:

Copy Complete
Copy Another? (Y/N)

5. Remove the diskette from the A drive and return it to the envelope. Now remove the diskette from the B drive, apply the label, and place it in its envelope. If you want to copy another diskette, answer Y and press *Enter*. Follow the directions on the screen and repeat the DISKCOPY process.

6. If you don't want to copy another diskette, remove the diskettes from the drives. Put your MS-DOS system disk back in drive A, type N and press *Enter*.

If You Have Only One Diskette Drive

It's possible to use DISKCOPY with a single-diskette-drive computer. The procedure is similar, except that the *Source* (original) and *Target* (copy) diskettes must be swapped. DISKCOPY will tell you when to swap. Follow the on-screen prompts and insert the source diskette first. The data will then be loaded into memory. When this procedure is complete, the screen prompt will tell you to insert the target diskette. At this point, the data from the source diskette (which has been stored in memory) will be copied to the target diskette.

DISKCOPY vs COPY

What are the advantages of DISKCOPY?
You don't have to format the target diskette: DISKCOPY automatically formats the disk as it copies. DISKCOPY is faster than using the FORMAT and COPY commands separately.

What are the advantages of COPY?
The COPY command copies files one at a time to an already-formatted diskette. DISKCOPY, on the other hand, makes an exact duplicate of the original diskette, copying information track by track.

When a program places data on a diskette, it puts it wherever there's an empty space. It fills up the first available area, and moves to the next. It will continue to fill these spaces (which are scattered all over the disk) until all the data is stored. One file may be divided into fifty sections and stored in fifty different places. It takes longer to read and write to these fragmented files and the chance for disk errors is increased. When backing up a data diskette

that is frequently used, format a new disk and use the COPY command. If you are copying a program diskette or one that contains information that is already in sequential order, use DISKCOPY.

Checking For Errors with CHKDSK

CHKDSK is a program that examines a diskette (or hard disk) for errors. It also shows total storage space on the disk, the number of files, how much space is left, the amount of RAM in use and the amount available. You should run CHKDSK at regular intervals. For diskettes that are used daily, you should run CHKDSK more frequently. The format for CHKDSK is:

CHKDSK A:

where A is the letter of the drive with the diskette to be checked. If you do not include a drive designation in the command, CHKDSK will check the default drive. As an example, place your MS-DOS diskette in the A drive and:

Type: CHKDSK
Press *Enter*

CHKDSK will give a status report similar to the one below:

Volume 225-395 Created Dec 4, 1985 5:51p

62496 bytes total disk space
25600 bytes in 3 hidden files
312320 bytes in 44 user files
24576 bytes available on disk

655360 bytes total memory
361392 bytes free

If CHKDSK gives a message indicating disk errors, refer to your *MS-DOS User's Guide.*

Chapter Six
Getting Started With a Hard Disk

Chapter Six
Getting Started with a Hard Disk

Now that you've followed the instructions in Chapters Two and Three and installed the hardware and software, you're ready to start working with MS-DOS. If you're a new computer user, be sure to read Chapter Four before you begin.

Consult the *MS-DOS User's Guide* included with the computer and Chapter Seven of this manual for further explanation of the operating system and the commands covered here.

Let's start by turning on the computer:

1. Turn on the video monitor.

2. The power switch is located on the right side of the computer. Move it to the (upper) ON position.

The computer will check memory (RAM) and the AUTOEXEC.BAT file will execute several commands. If your computer is a K286i-C, you will then see the Master Menu.

Master Menu

Master Menu is a KAYPRO utility program that helps you select applications software and perform routine housekeeping tasks. The top bar contains the time, date, and version number of the Master Menu program. In the large central area you will see an outlined box entitled Main Menu. In the right-hand sidebar you will see explanations of the highlighted menu item. The lower left bar has instructions on how to move around in the Master Menu.

Use the arrow keys to explore the different menus and options. If you choose an item by mistake you can cancel the activity by pressing *Esc*. If you press *Esc* before you select an activity, you will exit the Master Menu. When you exit the Master Menu you should see:

```
C:\MAIN>_
```

To get back to the Master Menu:

Type: MENUST
Press *Enter*

What's Been Done For You

When you or your dealer went through the installation procedure, the following things happened:

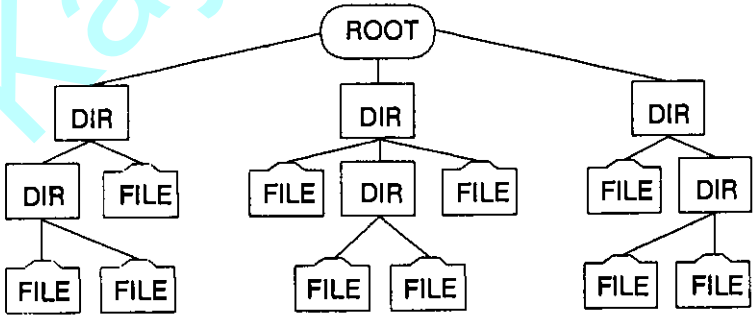
The INSTALL program formatted your hard disk, created the directory structure, and installed your application software. In addition, INSTALL created an AUTOEXEC.BAT file which automatically displays the Master Menu when you turn on your K286i-C.

From the Master Menu you can use most of the application software that came with the Model C. You can format diskettes, copy files, make duplicates of diskettes, and backup your hard disk.

The Master Menu is a helpful tool, but you will frequently need to work directly with the MS-DOS operating system. The information in this chapter will help you become acquainted with your operating system.

Directories

MS-DOS uses directories to organize files on the disk. Directories are separate storage areas for files. Files in one directory are isolated from files in another. Directories are arranged in a tree-like structure with branches extending downward, as shown in the example below:



The top directory in the tree is called the *root directory*. It is represented by a backslash (\). The root is created automatically when you format a diskette or hard disk.

If your computer did not have a hard disk, you might never need directories other than the root. But, since a hard disk can store more than sixty times as much information as a diskette, organizing files into directories is generally considered necessary.

Below the root directory are *directories* and *subdirectories,* which are used to store files. When you (or your dealer), went through the installation procedure, the directories and subdirectories you see on the chart were created. Directories or subdirectories other than the root may have any number of subdirectories. Each one of these subdirectories has a parent directory, which is above it in the structure. In the chart (and on your system), the root directory is the parent directory of MAIN, and MAIN is the parent directory of WRITE, and BASIC.

The root directory contains the AUTOEXEC.BAT file, COMMAND.COM and the subdirectories MAIN and UTILITY.

- **UTILITY** contains the MS-DOS program files, GWBASIC, and useful KAYPRO utilities.

- **MAIN** contains the files that run Master Menu and two subdirectories WRITE and BASIC.

  WRITE contains word processing programs.

  BASIC contains any files you might create while running BASIC from Master Menu

The Working Directory

With MS-DOS every drive has a *working* (or current) directory. When MS-DOS starts up, the root directory is the working directory. When you change the working directory, the computer will look in the new directory when it reads or writes files. When you boot your system, the instructions in your AUTOEXEC.BAT file will change the working directory to MAIN.

MS-DOS keeps track of the working directory the same way it keeps track of the default drive. Individual directories are isolated from each other, giving the appearance of separate disks. A directory listing of the files on drive C will not show a file on the diskette in drive A. You must either change drives

or tell MS-DOS where to look. The same is true for files in different directories or subdirectories.

Accessing Files and Pathnames

Files in separate directories are not totally isolated. Files not in the current directory can be accessed the same way as files on a different drive.

Directory Paths

You can move from directory to directory by means of a *path name*. A directory path name tells MS-DOS the location of a directory in the structure. MS-DOS then follows the path you have specified.

A path name consists of a series of directory names separated by backslashes (\). Each pathname is limited to 63 characters. Most commands will allow you to place a path name immediately following the drive letter and before the file name in the file specification. For example, if you want to copy a file TEST.TXT from the working directory to the directory \MAIN\WRITE you would:

1. Select **Copy Files** from the Utilities section of the Master Menu and at the **Source** prompt type:

   TEST.TXT

2. At the **Destination** prompt type:

   C:\MAIN\WRITE

Following directory paths is similar to driving through the streets of a city. Sometimes you can take a direct route to your destination, while at other times you must backtrack to a major intersection.

There are two kinds of paths: *Relative* and *Absolute.*

Relative paths are like the direct routes. They tell MS-DOS to start looking for the directory or file in the current directory. The first item in a relative path is a directory name listed in the current directory. This can be a subdirectory name or ".." (two periods) for the parent directory.

In the chart on page 6-2, if the working directory is WRITE, the relative path to BASIC would be:

..\BASIC

Remember, the ".." is shorthand for the parent directory (in this case, \MAIN).

Absolute paths tell MS-DOS to begin looking for your files at the root directory. The first item in an absolute path is a backslash (\). In the example above, the absolute path to BASIC would be:

\MAIN\BASIC

An absolute path may be immediately preceded by a drive letter. For example:

C:\MAIN\BASIC

Linking Directories with PATH

PATH is an internal MS-DOS command that allows you to link directories. Remember that directories exist to separate groups of data or programs. Separating information into directories and subdirectories has its drawbacks. For example, your MS-DOS utility programs are in a different directory than your word processing software. Without PATH you would have to change directories to use both MS-DOS external commands and word processing programs.

The PATH command makes changing directories to run many programs unnecessary. By using PATH you can set up a list of directories in which to search for programs. Your AUTOEXEC.BAT file (created by the INSTALL program) has already set PATH so that MS-DOS looks to subdirectories in this order: UTILITY, ROOT, and MAIN.

After using PATH, if you enter a command which looks for a file located in a different directory, MS-DOS will look in each directory specified by PATH. If MS-DOS finds the program file in one of the directories, it will run the program. For more information on how to change PATH, see Chapter Seven or your *MS-DOS User's Guide*.

Many programs are more easily executed if you create a full file specification with the drive designation, pathname, filename, and extension. Other programs (particularly those with overlay files) will not work properly unless the overlay files are in the same directory or subdirectory. In addition, older

WordStar (earlier than Release 4.0) will not accept pathnames as part of a filename.

There are a number of ways to avoid this problem:

1. Always keep the affected files in one large directory.

2. Copy any needed overlay files into every subdirectory where you will use the programs.

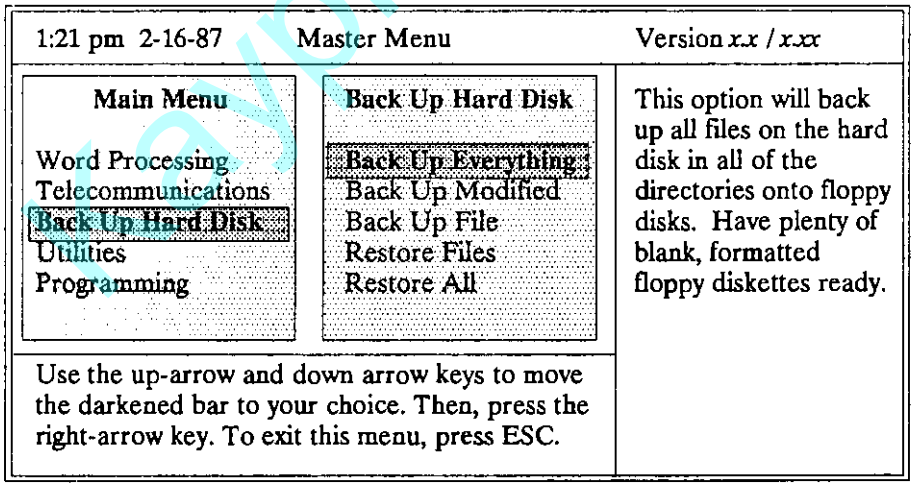
3. Change subdirectories on the C drive and run your programs from the A drive and write files to the C drive.

4. Become an expert in MS-DOS and learn to use commands like SUBST. See the *MS-DOS User's Guide* for details.

5. Through a user's group, locate a freeware or shareware utility program that helps solve the problem. One such program is DPATH.COM by James A. McGreggor Jr.

The KAYPRO Master Menu

Now that you've learned about directories, you're ready to work with Master Menu. From Master Menu you can run most of your application software and use the built-in library of utility programs. Here's a sample Master Menu (your version may differ depending on the date your computer was purchased).



Note:
To run programs using the Master Menu, use the arrow keys (either the standalone arrow keys or those on the numeric keypad) to highlight the desired program, then press *Enter*.

The chart below lists the menu selections and the MS-DOS commands invoked by each selection. Some of these commands have additional options you may want to use. See Chapter Five: "Getting Started With Diskettes," Chapter Seven: "Advanced Usage," and the *MS-DOS User's Guide* for more details. For information on utilities designed exclusively for KAYPRO computers, see Chapter Eight "KAYPRO Utility Programs." Here's a list of Master Menu Utilities accessible from the Master Menu and the corresponding programs or commands they invoke:

Master Menu Utilities	Corresponding Program or Command
Locate files	LOCATE
Format Diskette	FORMAT
Space on Disk	CHKDSK
Directory	DIR/P
Copy Files	COPY
Diskcopy	DISKCOPY
Set Time & Date	SETDOS

Locate File(s)

LOCATE will help you find a file on your hard disk, regardless of where the file is stored or in which subdirectory you begin your search. LOCATE can also be used to find subdirectories. The syntax is:

LOCATE [-switch]

Switch may be one of the following:

d Disregards subdirectories that match.

s Shows directories, but does not display the trailing backslash (\) on the end of the directory name.

? Typing **LOCATE -?** at the DOS prompt gives you the first of two help screens. Press the spacebar to release the second screen.

m Disables the pause between help screens.

Filespec may include the wildcard characters * and ?. LOCATE will find subdirectories as well as files and programs. LOCATE can also find duplicate files, regardless of how widely scattered they are.

Just for fun, you may want to find out how many files begin with the letter r. To do this:

Type: LOCATE r*.*
Press *Enter*

If your LOCATE listing is more than one screenful you can pipe LOCATE through MORE.COM. See Chapter Seven, "Advanced Usage" and your *MS-DOS User's Guide* for more detailed information on using pipes and the MORE command.

LOCATE has a built-in help facility, which can be accessed from the DOS prompt (you must press *Esc* to exit the Master Menu). Typing LOCATE at the DOS prompt will produce:

Locate ver X.XX Kaypro Corporation
Usage:
Locate [-dsm?] [d:] [pathname] filespec [...]
Locate -? for extra help

You can use this command to find a specific file on your hard disk. For practice, let's use this command to find the file FORMAT.EXE.

First, use the arrow keys on your numeric keypad (make sure the NUM LOCK light on your keyboard is off) to select **Locate File(s)**, and press *Enter*. When you see the "Filespec:" prompt at the bottom of the screen, type **FORMAT.EXE** (since that's the name of the program you are looking for) and press *Enter*. You'll then be prompted with "**Switches?**" Press *Enter* if you don't want to use switches, and LOCATE will search your disk. When it finds FORMAT.EXE it will display:

C:\UTILITY\FORMAT.EXE

This shows that FORMAT.EXE is located in the UTILITY subdirectory. When you are finished with LOCATE, press any key on the keyboard and the Master Menu will return.

The Format Command

As you learned in Chapter Four, MS-DOS cannot use a diskette until it has been formatted. The FORMAT.EXE program prepares diskettes to store data. FORMAT is an external MS-DOS command. The Master Menu program executes FORMAT.EXE and allows you to format diskettes without leaving the Master Menu.

FORMAT also checks for any defective tracks. Information cannot be stored on a defective track. If a diskette has many of these tracks, it may be impossible for you to format it. When the computer is unable to format a diskette, it will abort the process and display an explanatory error message. A faulty diskette should be discarded or returned to the dealer.

CAUTION:
Reformatting erases all information previously stored on a diskette or hard disk. Any important files contained on a diskette must be copied to another diskette or the hard disk before reformatting.

The K286i is capable of using either 1.2 Megabyte High Capacity or 360 Kilobyte diskettes. If you want to transfer your data to a computer which reads only 360K diskettes (for example, the KAYPRO PC or PC-30), you should use the 360K disks. The KAYPRO PC and PC-30 cannot read or write to 1.2 Megabyte High Capacity diskettes.

Formatting diskettes: 360k vs 1.2 MB
Note: MS-DOS requires slightly different procedures for formatting the two types of diskettes. When formatting a 360K diskette in a high capacity drive (such as the K286i), you need to add "/4" to the basic FORMAT command. We have placed reminders to that effect in the different sections that follow. All other directions and options are the same.

Formatting with Master Menu

To begin the format procedure you will need at least one blank diskette.

1. Turn the computer and monitor on. Insert a blank diskette in drive A. Carefully slide the diskette into the drive with the label up and access slot forward. Close the drive.

2. From the Master Menu, use one of the the down arrow keys to select **Utilities**.

3. Press the *Enter* key to enter the Utilities menu. Your options will look something like this:

Utilities

Locate File(s)
Format Diskette
Space on Disk
Directory
Copy Files
Diskcopy
Set Date & Time

4. Use the down arrow key to highlight **Format Diskette.** Then press the *Enter* key. You will now be prompted for a drive letter. Type **A:** (don't forget the colon), since the diskette to be formatted is in drive A. (Remember, if you accidentally format drive C you will erase everything on the hard disk).

You will then be prompted for a "Switch" (for more information on switches, see the previous chapter). If you are using a 360K diskette, don't forget the /4 switch. Type in the desired switch, or just press *Enter*. The screen will clear and the following message should be displayed in the upper left hand corner of the screen:

Insert new diskette for drive A:
and strike ENTER when ready_

5. Press *Enter*. The formatting process will begin at this point. During the formatting procedure the screen will display:

Head : x Cylinder : xx

When the formatting process is complete, the following message will be displayed:

Format complete
Format another (Y/N)?

In addition, there will be information on the amount of space available on the newly-formatted diskette.

6. If you have another diskette to format, type: **Y** and press *Enter*, then follow the screen prompts to repeat the formatting process.

7. If you do not wish to format another diskette, type: **N** then press *Enter.* Remove the newly-formatted diskette from drive A.

8. You will then return to the Master Menu. The format process is complete.

Adding MS-DOS to the Diskette While Formatting

When formatting, you have the option of adding the MS-DOS operating system to a diskette. This will create a *boot* or *system* disk. Adding MS-DOS to a formatted diskette allows you to load and run programs directly without a separate MS-DOS boot diskette.

If you start or reboot the computer with a diskette in the A drive, it will attempt to boot from the diskette drive. If the diskette has been formatted with the MS-DOS system, the computer will reboot successfully. Your K286i-C will read the diskette in drive A and load the operating system into the computer's internal memory (RAM).

If you attempt to reboot with a diskette in the A drive which has not been formatted with the MS-DOS system, you will get an error message:

Non System Disk or Disk Error
Replace and strike any key when ready

Note:
If you boot your hard disk computer from a diskette, the computer will bypass the AUTOEXEC.BAT file on your hard disk. If you want the AUTOEXEC.BAT file to execute when booting from a diskette, copy AUTOEXEC.BAT from your hard disk to the diskette.

If you boot from a diskette that has a different version of MS- DOS, you might not be able to access the hard disk. For example, if your hard disk has been formatted with MS-DOS version 3.2 and you reboot with a diskette formatted with version 2.11, then try to change to the C drive, you'll be greeted with:

Invalid Drive Specification

This error message means that the operating system doesn't know your hard disk is there. Correct this problem by rebooting with the proper MS-DOS version.

Caution:
Adding MS-DOS to the diskette uses nearly 70 kilobytes of storage space. Consider the amount of space you will need on a diskette before creating a system diskette.

To add MS-DOS while formatting:

1. Select **Format Diskette** from the Utilities Menu and press the right arrow key.

2. At the **Drive** prompt, type the drive where the diskette to format will be located (probably A) and press *Enter.*

3. At the **Switches** prompt type **/S** (if you are formatting a 360K diskette, type **/4/S**) and press *Enter.*

The **/S** tells the operating system to add the operating system while formatting. From this point on, the instructions are the same as those for the basic formatting procedure.

Assigning a Volume Name to a Diskette

You can also assign a volume name to a diskette while formatting by using the **/V** switch. A volume name is a convenient way to keep track of your diskettes. Each volume name acts as a name tag for that diskette.

If you follow the standard formatting instructions and type a **/V** switch, MS-DOS will add a volume name to the diskette. Use both the volume and system switches (Example: **FORMAT A:/S/V**) to create a diskette with both the operating system and a volume name. You can do the same thing with a 360K diskette by using the **/4** parameter with the other switches. (Example: **FORMAT A:/4/S/V**)

When the formatting is complete, you will be asked to type the volume name of the diskette. A volume name may consist of up to 11 letters and numbers. Do not use special characters or blank spaces.

The Space on Disk Command

There's an easy way to find out how much space is left on your hard disk . Select **Space on Disk** from the Utilities menu and press *Enter.* You will then be asked for a drive letter. To check the hard disk type **C:** and press *Enter.*

To check space on a diskette, type the appropriate drive letter (Example A:) followed by a colon.

When you press *Enter*, the red disk light will glow as the computer searches the disk (or diskette) for free space. When the process is completed, the screen will display the disk storage space and memory available. Press any key to return to the Master Menu. This feature can be useful if you are planning to copy new software to your hard disk and want to see if there's enough room.

If you check your hard disk, you should see a status report similar to this:

Volume 225-395 Created Dec 4, 1986 5:51p

21204992	**bytes total disk space**
45056	**bytes in 3 hidden files**
12288	**bytes in 6 directories**
1955840	**bytes in 137 user files**
19191808	**bytes available on disk**
655360	**bytes total memory**
605776	**bytes free**

Strike a key when ready

The Directory Command

From the Master Menu, selecting the **Directory** option of the Utilities submenu will give you a listing of files on a selected disk, diskette, or subdirectory.

DIR is the MS-DOS command Master Menu uses to show the contents of your disk or diskette. This command lists files, their size in bytes, and the time and date they were last altered.

At the *Pathname* prompt press *Enter* (or enter a specific pathname, if desired) to get a listing of the working directory. At the *Switches* prompt press *Enter*. This will give you file listings a page at a time.

If you prefer to see all the filenames on one screen, type /W at the switch prompt and press *Enter*. This will display all the files (without time, date, or size attributes) in a wide format.

The **DIR** command can also be used to check files on a different drive. If you want to check files on a diskette in drive A, type A: at the Pathname prompt, then answer the Switches prompt (just press *Enter* if you don't want to use switches).

For an explanation of more advanced DIR options see Chapter Seven: "Advanced Usage."

The COPY Command

The **COPY** command copies files, one at a time, onto a diskette or hard disk. Whenever you need more than one copy of a file, you can use the **COPY** command to create an exact duplicate. A simplified format of the **COPY** command can be expressed like this:

COPY THISFILE.TXT THATFILE.TXT

Where THISFILE.TXT is the original file you want to *copy*, and THATFILE.TXT is the new file you want to *create*. Remember, when you are using a hard disk, you may also need to include a drive designation and pathname to show the proper subdirectory.

Let's copy the file D.COM from your UTILITY directory to the diskette in drive A. From the Master Menu select **Copy Files**. At the **Source** prompt:

Type: C:\UTILITY\D.COM
Press *Enter*

At the **Destination** prompt:

Type: A:D.COM
Press *Enter*

The screen will clear and you will see the message **1 File(s) Copied** before returning to Master Menu. If you watch very carefully you may see the red hard disk light (by the keylock on the front panel) and the diskette drive light glow as the file is read from drive C and copied to drive A.

You can change the filename as you copy the file. To copy the file D.COM to the A drive and rename it TEST.COM, at the **Source** prompt:

Type: C:\UTILITY\D.COM
Press *Enter*

At the **Destination** prompt:

Type: A:TEST.COM
Press *Enter*

Again you will see the message **1 File(s) Copied,** and the file D.COM will be copied to the diskette in the A drive. It will be an exact copy of the original D.COM file, except that it is now named TEST.COM.

There are some limitations to the COPY command: you cannot have two files of the same name on the same diskette or subdirectory, and you can't copy system or hidden files.

You can also use the COPY command from the DOS prompt (C>). For an explanation of this method read Chapter Five: "Getting Started With Diskettes." For information about advanced techniques with the COPY command, see Chapter Seven: "Advanced Usage."

Making a Backup Diskette with DISKCOPY

Unlike COPY (which copies files one by one), DISKCOPY makes an exact duplicate of a diskette. This can be useful for making backup copies of valuable diskettes. To use DISKCOPY from the Master Menu:

1. Select **DISKCOPY** from the Utilities section.

2. At the **Source drive** prompt type the drive letter where the Source (original) diskette will be located (on a standard K286i-C, drive A:) and press *Enter*.

3. At the **Destination drive** prompt type the drive letter (A:, if you have one diskette drive) where you will put the blank diskette. Press *Enter*.

4. The screen will clear, and a message will appear in the upper left corner of the screen:

Insert SOURCE diskette in drive A:
Strike any key when ready_

The *Source* diskette is the one you want to copy.

5. After you have inserted the diskette and pressed a key, you will see a message like this:

Copying 40 tracks
9 Sectors/Track 2 Side(s)

6. When all the data from the Source diskette has been read into memory, you'll see:

Insert TARGET diskette in drive A:
Strike any key when ready_

The *Target* is the blank diskette which will receive the copy.

8. When the copying is completed, the following message will be displayed:

Copy another (Y/N)?_

9. Type **Y** to make additional copies. Then repeat Steps 5 through 8.
Or, if you don't want to make more copies, type **N** to return to Master Menu.

DISKCOPY vs COPY

What are the advantages of using DISKCOPY?

You don't have to format a diskette: DISKCOPY automatically formats the disk as it copies. DISKCOPY is faster than using the FORMAT and COPY commands separately.

What are the advantages of using COPY?

The COPY command copies files one at a time to an already-formatted diskette. DISKCOPY, on the other hand, makes an exact duplicate of the original diskette, copying information track by track.

When a program places data on a diskette, it puts it wherever there's an empty space. It fills up the first available area, and moves to the next. It will continue to fill these spaces (which are scattered all over the disk) until all the data is stored. One file may be divided up into fifty sections and stored in fifty different places. It takes longer to read and write to these fragmented files and the chance for disk errors is increased. The COPY command, on the other hand, can keep your file in one piece.

When backing up a data diskette that is frequently used, format a new disk and use the COPY command. If you are copying a program diskette or one that contains information that is already in sequential order, use DISKCOPY.

Setting the Date and Time

When you ran the SETUP program, the computer's built-in clock/calendar was set. This internal timepiece (called the *real-time clock*) operates on a built-in battery and remembers the time and date even when the computer is turned off.

It is, however, occasionally necessary to reset the real-time clock. The *Set Date and Time* option on the Master Menu will not permanently reset these values. Instead, you should use the SETUP program (details on this procedure in Chapter 3) to permanently reset the date and time.

Chapter Seven
Advanced Usage

Chapter Seven
Advanced Usage

This chapter assumes you have already installed your hardware and software and have some experience with the commands in the "Getting Started" chapter. Now you're ready to start working with some of the advanced features of the MS-DOS operating system.

In this chapter you will be introduced to the following additional internal MS-DOS commands: **DEL**, **TYPE**, **REN**, **PROMPT**, and **CLS**. You will also learn additional external commands, and some timesaving shortcuts. For more detailed information on the topics covered here, consult your *MS-DOS User's Guide*.

Chapter Seven is divided into two parts. The first section is for both the K286i-A (diskette drive only) and K286i-C (hard disk model). The second section is oriented towards K286i-C owners and explains the directory structure of a hard disk system.

Whether your computer is a K286i-A or a K286i-C, you must be at the MS-DOS system prompt (**A>** or **C>**) to issue MS-DOS commands. At the system prompt, type the name of the command, followed by any additional required information. This additional information is referred to as a *parameter*. When you have completed typing the command and its parameters, press the *Enter* key, and MS-DOS will execute the command.

Note: For K286i-C Users:
All external commands mentioned in this chapter are located in your \UTILITY subdirectory. In the examples, Drive A is the primary diskette drive and Drive C is the hard disk.

Section A

Renaming Files with REN

REN allows you to change the name of any file to a new name you designate. The format for the REN command is:

REN THISFILE.EXT THATFILE.EXT

where THISFILE.EXT is the file to rename, and THATFILE.EXT is its new name. REN will leave the renamed file on the original drive and directory. If there is a different drive letter in the second file specification (Example: REN A:THISFILE.EXT C:THISFILE.EXT), MS-DOS will respond with an error message.

As an example, change the name of the file A:TEST.COM to TEMP.COM. From the A> prompt (C> if you have a hard disk):

Type: REN A:TEST.COM TEMP.COM
Press *Enter*

List the files (using the DIR command), and you will see that the filename has changed. To change it back:

Type: REN A:TEMP.COM TEST.COM
Press *Enter*

Deleting Files with DEL

The DEL command is used to delete files. When using this command, be careful to avoid accidental deletion of a valuable file. Once a file is deleted, it cannot be recovered!

The format of the DEL command is:

DEL MYFILE.TXT

where MYFILE.TXT is the sample file to delete. To delete the file TEST.COM from the A drive, you would:

Type: DEL A:TEST.COM
Press *Enter*

The system prompt will return and the file will be deleted. List the files (with the **DIR** command) and you will see that it no longer appears on the list.

Clearing the Screen with CLS

CLS clears the screen and displays the system prompt in the upper left corner. To illustrate, fill the screen with text by listing the files on the diskette in the A drive using the DIR/W command. Now, let's clear the screen:

Type: CLS
Press *Enter*

The screen will clear and the system prompt (A> or C>) will reappear in the upper left corner of the screen.

Shortcuts and Wildcards

You have been doing more work than necessary. You can use advanced MS-DOS techniques to save time and keystrokes. To make a copy of the file CAT.TXT and rename it DOG.TXT at the A> prompt you would normally:

Type: COPY A:CAT.TXT A:DOG.TXT
Press *Enter*

Since both files will be on the default (on the K286i-C, the default drive is C) drive, you don't need to type the drive letters. COPY assumes that CAT.TXT is on the default drive and that you want to create DOG.TXT on the same drive. To illustrate, if A is the default drive, then:

COPY A:CAT.TXT A:DOG.TXT

is the same as:

COPY CAT.TXT DOG.TXT

If you don't designate a source drive, MS-DOS assumes the file you wish to copy is on the drive you are using. If you don't designate a target drive, MS-DOS assumes you want the copy to be on the default drive. If you were copying CAT.TXT onto a different drive you could use either:

COPY CAT.TXT B:CAT.TXT
or
COPY CAT.TXT B:

When you omit the filename of the target file, MS-DOS will assume you want to use the existing filename. CAT.TXT is carried over as the filename of the new file.

Why use the long form at all?

Sometimes specifying the drive and the target filename is important. Since you can't have two files with the same name on the same diskette or hard disk directory, you may have to change your target filename to avoid a conflict.

Wildcard Characters

The question mark (?) and the asterisk (*) are referred to as wildcard characters. They can be used in certain MS-DOS commands to match any character in a certain location in a file name.

The question mark (?) matches any one character that occurs at the position of the question mark in a file name or extension.

The asterisk (*) matches any characters that occur to the right of the position of the asterisk in a file name or extension. For example, the command:

DIR *.COM

displays all files with an extension of .COM

The command:

COPY FILE?.TXT

will copy the following files:

FILE.TXT
FILE1.TXT
FILE2.TXT
FILE3.TXT
FILES.TXT

The command **COPY A:FILE*.TXT B:** would copy any file on drive A with a file name beginning with FILE and an extension of .TXT to drive B. The asterisk wildcard will not only copy all the files in the previous example, but will also copy files like those shown below.

FILE45.TXT
FILEINFO.TXT
FILEIDX.TXT

These three files would not be copied by the COPY FILE?.TXT command because the "?" tells the computer to look for filenames with only one character at the wildcard position. When you use the "*" it will find any file with a .TXT extension, FILE as the first four characters in the filename, and any number of characters at the wildcard position. The asterisk wildcard will also copy the filename if there are no additional characters at the wildcard position (Example: **A:FILE.TXT**).

Editing Command Lines

Another timesaving feature of MS-DOS is that command lines can be stored and repeated when you need them. When you enter a command at the system prompt, the command is stored in a *command template*. The contents of the command template are replaced each time you enter a command.

By using the function keys at the top of the keyboard, the previous command can be repeated with two keystrokes. A command will not execute until you press the *Enter* key.

You can also recall the command line, make changes to it, and then enter the revised command line. These are the advantages:

1. You can repeat a command without retyping.

2. If you get unexpected results after entering a command, you can press one key and see what you entered.

3. You can correct errors in commands, or enter a series of similar commands by editing the previous command instead of retyping.

To display the command template one character at a time, press the **F1** function key or the right arrow key. (Make sure the *Num Lock* is OFF).

To display the entire contents of the command template at once, press the **F3** function key.

To display the contents of the command template up to character **x**, press **F2**, followed by the character you want **x** to represent. If the second key you press is not found in the command template, the contents of the template can still be checked by pressing either **F3** or **F1**.

To skip the contents of the command template up to character **x**, press **F4**, followed by the character you want **x** to represent, then press **F1** to display and begin editing at character **x**. If the second key you press is not found in the command template, the contents of the template can still be checked by pressing either **F3** or **F1**.

To edit the new command line use the *Backspace* key or left arrow key to erase. Type your changes and enter your new command. To correct a mistake in typing, backspace and display again using either **F1**, **F3** or the right arrow key.

Redirecting Input and Output

In normal operation, MS-DOS has a built-in sequence for transferring information. This sequence can be referred to as standard input and output (input/output is often abbreviated as "I/O"). By using special characters you can alter the pattern or redirect the flow.

You can create files from directory listings and other screen displays by redirecting the screen output to a diskette. The resulting diskette files can be edited with your WordStar program and added to existing text files. The "greater-than" symbol (**>**) is one of the special characters used to redirect output.

Let's send the directory listing to a file called MYFILES.DIR rather than to the screen:

Type: DIR > MYFILES.DIR
Press *Enter*

This file can be useful because it helps you keep a record of your computer work. Use it to see exactly what files you had on a given day. If you need a cumulative record of your work, store each directory listing under a different name and keep it on diskette.

To append the directory listing to the end of MYFILES.DIR, (rather than overwriting the older version) type:

DIR > > MYFILES.DIR
Press *Enter*

Concatenating (Joining) Files with the COPY Command

To *concatenate* files is to join them together. Perhaps you have written a number of small letter files. At the end of the month, you want to merge them into one large file. You can use an option of the COPY command to merge these files into one large file. To concatenate files, use the plus sign between the filenames.

Caution:
Do not concatenate files with COM or EXE extensions.

The command:

COPY LETTER1.TXT + LETTER2.TXT BIGFILE.TXT

combines the smaller files into BIGFILE.TXT. If the file BIGFILE.TXT already existed, it's contents would be overwritten. You can use wildcard characters when concatenating files. The command:

COPY *.TXT TOGETHER.TXT

Combines all files with an extension of TXT into a new file named TOGETHER.TXT.

Remember:
If you give the new file the same name as an existing file, the existing file will be overwritten.

On page 7-8 we appended the new directory listing to the file MYFILES.DIR by redirecting the output. You can perform the same function with the COPY command. If you have two files named DOGS.LST and CATS.LST, you can update the file DOGS.LST with the information in CATS.LST. Type the command:

COPY DOGS.LST + CATS.LST
Press *Enter*

When you concatenate files and do not add a destination file name, the COPY command appends the contents of the other files to the first file listed in the command.

Filters and Pipes

A *filter* is a program which reads input data (usually from a file), modifies the contents, then sends the modified output to the screen (or other output device). In this chapter, two of the three filters included with MS-DOS 3.2 will be discussed: **MORE.COM** and **SORT.COM.**

Command piping lets you give several commands to the system simultaneously. Using pipes, you can combine commands, filters, and redirection in a single command line. Pipes are specified with the vertical bar, or *pipe* (|). This character appears on your keyboard (it's just below the right hand *Shift* key) as two short vertical lines.

Always put a space between the command and the pipe symbol, and between the pipe and the command which follows. It is important to remember that output from a command on the left side of the pipe must be in a form which the command on the right side can accept as input.

The SORT filter can be useful for reorganizing directory listings before they are displayed on the screen. When using this sort, numbers are placed before letters while uppercase and lower-case letters have the same value. To sort the output of the directory command:

Type: DIR | SORT
Press *Enter*

To sort the listing of the current directory and write it to a disk file (as, for example, DISK.DIR) instead of displaying it on the screen, type:

DIR | SORT >DISK.DIR
Press *Enter*

Viewing Files

TYPE allows you to display the contents of most text and data files on the screen. You can't use TYPE, however, to view the contents of program files. (Example: If you tried to type a .COM file, you'd get nothing but garbage characters on the screen and strange sounds from your computer speaker.) The format for the TYPE command is:

TYPE A:MYFILE.TXT

where A is the drive letter, MYFILE is the filename, and .TXT is the file extension (optional) of the file you want to view. If you don't specify a drive letter, the computer will look for the file on the logged drive.

To view the contents of a sample file called MYFILE.TXT, you would type this command at the DOS prompt:

TYPE A:MYFILE.TXT
Press *Enter*

You will then see the file contents, which will probably scroll by so quickly you won't be able to read them. To view a file one screenful at a time, pipe through MORE. Example:

Type: TYPE A:MYFILE.TXT | MORE
Press *Enter*

The MORE filter is extremely useful when typing files which contain more than one screenful of text. MORE works like the DIR command's /P switch, displaying the text a screenful at a time. By sending output from the TYPE command through MORE, the screen will fill and then pause with this message:

--More--

When you are finished reading the first page of text, press any key and the next page will scroll on the screen.

If you don't want to use MORE, you can use *Ctrl S* (hold down the *Ctrl* key and press S) to pause the output on the screen. To restart the scrolling, use *Ctrl S* again.

Files created with WordStar and other software programs may contain unusual characters when viewed with TYPE. These strange characters are codes with specific meanings to the program. When the files are viewed using the program with which they were created, these special control codes are usually invisible.

Changing The System Prompt

Tired of looking at the same old A> or C>? The PROMPT command enables you to create your own custom screen prompts. Instead of A>, you can see "Time--13:00, Drive A," "Good Morning, Nancy!" or any message you select. Let's experiment with this command. Type:

PROMPT Good Morning, Get To Work!
Press *Enter*

The system prompt should now read "Good Morning, Get To Work!" To change the prompt back to it's original form, just type **PROMPT** again and press *Enter*.

The PROMPT command also allows you to display MS-DOS information in the system prompt. You can modify the prompt to show the time and date, the MS-DOS version number, and many other values. To change the prompt designation, type **PROMPT $**, followed by one of the control codes shown below. Each control letter is shown in the chart below, followed by the value which will appear in the prompt:

Control letter	Value displayed
t	**The current time**
d	**The current date**
p	**The current directory of the logged diskette drive**
v	**The MS-DOS version number**
n	**The default drive**
g	**The greater-than character(>)**
l	**The less-than character(<)**
b	**The vertical bar character(|)**
,	**A carriage return and a line feed**
s	**A leading space**
h	**A backspace**
e	**The ESCape character**

Let's use the PROMPT command to create a prompt with the time, date, current logged diskette drive and familiar >. Use the control letters **t,d,n,** and **g,** which will display the time, date, default drive, and greater than symbol. Each of these control characters should be preceded by the dollar sign. When you are at the system prompt, Type:

PROMPT tdng
Press *Enter*

Your prompt should now look something like this:

13:00:00.00 Fri 9-19-1986 A>

KAYPRO K286i-C (hard disk model) owners can create a system prompt which shows the current directory:

Type: PROMPT pg
Press *Enter*

Your prompt should now look like this: **C:\>.** The prompt will also indicate the subdirectory, if any. (Example: C\ MAIN\WRITE >) You will find this

feature valuable when using the MKDIR, CHDIR, and RMDIR commands explained later in this chapter. Experienced hard disk users frequently modify the prompt in this manner. Your AUTOEXEC.BAT file has already done this for you.

Section B

Beyond the Master Menu: K286i-C

As you learned in Chapter Six, the Master Menu gives you access to a limited number of MS-DOS commands. To use other MS-DOS commands or options, you must be at the MS-DOS system prompt. To exit the Master Menu, press the *Esc* key.

Before continuing with this section, you should study the directory structure of your hard disk. As you expand your software library, you'll eventually need to create your own subdirectories. The following section explains the MS-DOS commands which create, change, and remove directories. For more detailed information on these commands, see your *MS-DOS User's Guide*.

Directory Names

You cannot name the root directory. With that exception, directories can be given names similar to file names. Unlike filenames, however, extensions (like .TXT) are not permitted. All characters used for file names are also valid for directory names. Please review the section in Chapter Four if you have any questions about naming files.

Every directory (except the root directory) contains two special entries. One contains a single period (.) instead of a file name--it identifies the directory as a subdirectory. The other entry contains two periods (..), and is a shorthand name for the parent directory.

Press *Esc* to exit the Master Menu. You will now see the system prompt (C:\MAIN>). Type **DIR** and press *Enter*. Your screen should look something like this:

```
C:\MAIN> DIR

Volume in drive C has no label
Directory of C:\MAIN>

.                    <DIR>      10-13-68   12:20p
..                   <DIR>      10-13-86   12:20p
WRITE                <DIR>      10-13-86   12:20p
BASIC                <DIR>      10-13-86   12:20p
MASMENU   DAT         7929      8-21-86    5:14p
MASMENU   EXE        16568      6-18-86    3:11p
MASMENU   TXT        19278      8-21-86    5:14p
MASPREP   EXE        12784      6-18-86    3:11p
MENUST    BAT          249      6-18-86    3:11p
BEGINNER  BAT          483      10-13-86   12:33p
B&W       BAT         1401      10-13-86   12:34p
COLOR     BAT         1409      10-13-86   12:34p
KDESK     BAT          643      10-13-86   12:34p
MENUSUB1  BAT          141      10-13-86   12:34p
        17 File(s)    19189760 bytes free

C: \MAIN >_
```

Displaying Directories with TREE

Your directory structure may vary slightly from the one shown. To find out what directories and subdirectories are on your hard disk, use the MS-DOS command TREE at the system prompt.

Type:TREE
Press *Enter*

Adding the /F switch to this command will allow you to see the files within each directory and subdirectory.

Type: TREE/F
Press *Enter*

You can also use the methods described earlier in this chapter (see Redirecting Input and Output) with the TREE program to create a file of your current directory structure. Or, you may want printed copy for a permanent record. See your *MS-DOS User's Guide* for more details on these procedures.

Creating Directories with MKDIR

The command for creating new directories is MKDIR (the abbreviation MD is also acceptable) The format for MKDIR is:

MKDIR *name* **or MD** *name*

where *name* is a valid directory name. MKDIR will create a subdirectory in the working directory using the name you specify.

To create a subdirectory called TEST in the working directory:

Type: MKDIR TEST or Type: MD TEST
Press *Enter*

The command **MD** is an abbreviation for MKDIR. Both MD and MKDIR function in exactly the same way.

Changing Directories with CHDIR

The command CHDIR (or the abbreviation CD) changes the working directory on the default drive. The format for CHDIR is:

CHDIR *path*

where *path* is an absolute or relative path. For example, to change the working directory to a subdirectory called TEST:

Type: CHDIR TEST or CD TEST
Press *Enter*

Your prompt should now look like this C:\TEST>. If you type CHDIR without specifying parameters, it will display the absolute path name of the working directory. For example, to display the name of the working directory:

Type: CHDIR or CD
Press *Enter*

The command **CD** is an abbreviation for CHDIR. Both CD and CHDIR function in exactly the same way.

Removing Directories with RMDIR

You can remove a directory or subdirectory by using the RMDIR command (or its abbreviation RD). There are two important things to remember when using this command:

First, you can't remove a subdirectory while you are in that subdirectory. If your prompt reads C:\TEST, and you type RMDIR TEST, you will get the message:

Invalid path, not directory, or directory not empty

Use the CHDIR \ command to change to the root directory before you use the RMDIR command.

Second, you must delete all files and remove any subdirectories in the directory before you use RMDIR. Use the either the DEL or ERASE command (see your *MS-DOS User's Guide* for details) to delete files from a directory. You can't remove the root directory. The format for the RMDIR command is:

RMDIR *path*

Where *path* is an absolute or a relative path name. For example, to remove an empty subdirectory called TEST:

Type: RMDIR\TEST or RD\TEST
Press *Enter*

The command **RD** is an abbreviation for RMDIR. Both RD and RMDIR function in exactly the same way.

The PATH Command Revisited

In Chapter Six: "Getting Started With a Hard Disk," we looked at the internal MS-DOS command **PATH**. In that chapter we noted that your AUTOEXEC.BAT file automatically sets the path to \UTILITY;\C:\;\MAIN. When you create directories of your own, you will find they are not on the path set by the AUTOEXEC.BAT file.

If you try to use a program which is located in another directory and the directory where you are working (the working directory) is not on the path, you won't be able to access the program unless you know how to use PATH.

If you type PATH with no parameters, it will display the current path setting. To display the current path list:

Type: PATH
Press *Enter*

If there is no path designated, MS-DOS will display:

path = NO PATH

The format for PATH is:

PATH path;path;path;...

where path is any valid absolute path name. Path names are separated from each other by a semicolon (;). A path name must be expressed in 63 characters or less. The total number of characters (including spaces, symbols and the command itself) in the path is limited to 127.

The path command **PATH C:\UTILITY;C:\;C:\MAIN** is used in the AUTOEXEC.BAT file which automatically sets up the computer when you boot up. This file can be modified using WordStar in the non-document mode (or any word processor capable of working with ASCII files) to create a custom path specific to your needs. For more detailed information on the PATH command, see your *MS-DOS User's Guide.*

Chapter Eight
KAYPRO Utility Programs

Chapter Eight
KAYPRO Utility Programs

Kaypro Corporation has provided several utility programs with the K286i that are not part of the standard MS-DOS library. These utilities are designed to make it easier to use your computer. These programs are: CHATTR, D, LOCATE, KCOPY, and MAXCYL.

CHATTR--for CHanging File ATTRibutes

Files have different *attributes*--characteristics that allow them to be used in specific ways. Some files are *hidden* files and can't be viewed, erased or copied. *Read only* files are protected and can't be modified. The following is a list of attributes a file may possess.

System Files
A *system* file is one that is part of the operating system (such as MSDOS.SYS). A system file is a type of hidden file (see below).

Read Only
A *read only* file cannot be erased or changed in any way. You can look at a read only file, but cannot add or change the information.

Hidden Files
A *hidden* file is a file that cannot be observed or affected by most commands. If you use the DIR command to list files, you can see every file in the directory except hidden files. A hidden file cannot be copied or erased. Kaypro's CHATTR and KCOPY programs can affect hidden files. KCOPY is described later in this chapter.

Archive Files
An *archive* file is a file that has not been copied (by a backup program) since it was last changed. Every time you change a file, the archive attribute is set. When you make a backup of a file, this attribute is cleared. This speeds up the backup process, since it only copies data which has changed since the last backup.

CHATTR is a program for changing the attributes of a file. A file may possess any or all of these attributes and each attribute may be turned on or off independently. CHATTR can be used to set or change any of the above

attributes. It can also be used to change or display the volume name of a hard drive or diskette.

The standard syntax for using CHATTR is:

CHATTR function [function] ...

where *function* refers to any of the allowable operations. When using CHATTR, you may string together several different operations on the same command line.

The syntax for function is:

[operation [switch] filespec [filespec] [filespec]...]

Operation may be any one of the following:

+ Turns ON the specified attribute(s) without affecting the others.

- Turns OFF the specified attribute(s) without affecting the others. The "-" operator is also required by the "?" switch to request help screens, and by the "v" switch when working with Volume names.

= Turns ON the specified attribute(s) and turns OFF any that are not mentioned.

The *switches* are:

? Type CHATTR-? at the DOS prompt to get the first of several help screens. Press the spacebar to view additional screens.

m Used only in conjunction with -? to disable the pauses between screens.

r Specifies the Read-Only attribute.

s Specifies the System attribute.

h Specifies the Hidden attribute.

a Specifies the Archive attribute.

d Instructs CHATTR to search the directory and all its subdirectories when performing operations. (Normally CHATTR only works in the specified directory.)

v Used to change or display volume label. This must be used with the "-" operator. See instructions below on using the v switch.

Filespec refers to any drive and file designations normally usable with MS-DOS. Wildcards such as * and ? are permitted. Examples of valid filespecs:

A:MYFILE.TXT, *.TXT, and YOURFILE.*

Let's experiment a bit. To change the file FORMAT.EXE in the current directory to a Hidden file you would:

Type: CHATTR +h FORMAT.EXE
Press *Enter*

Now let's try listing the files with DIR. FORMAT.EXE has disappeared! To change it back from a hidden file to a standard file:

Type: CHATTR -h FORMAT.EXE
Press *Enter*

To use CHATTR to change the Volume name of a disk, you should type:

CHATTR -v [d:] [name] [/d]

where [d:] is the drive name; [name] is the desired Volume name; and [/d] is a switch to delete an existing Volume name (not used when a name is specified). To change the volume name of a diskette in the A drive named MINE to YOURS, type:

CHATTR -v A:YOURS

Now, check your work. Use the DIR A: command to read the volume label on the diskette. It should now be **YOURS**.

The program CHATTR comes with a built-in set of instructions. If you type CHATTR at the DOS prompt with no parameters, you'll get the following message:

```
Chattr ver X.XX Kaypro Corporation
Usage:
chattr [[-|+|=[rshadm?] filespec [filespec [...]]...]
chattr -?   for extra help
```

If you need extra help, type **CHATTR -?** and additional help screens will appear.

D--a File Listing Utility

D is similar to the MS-DOS DIR command, only it's easier to use. It tells you what files exist on a disk, and the size of each file in kilobytes. D displays an easy-to-read chart containing the filenames and sizes. The format for D is:

D <*drive*>

where *drive* is the name of the drive where the files you want to list are located. If you do not type a drive designation, D will display the files on the diskette in the default drive.

To use D on a different drive, you should specify the drive letter. To use D to list the files on a diskette in the B drive:

Type: D B:
Press: *Enter*

Remember that, unlike the MS-DOS DIR command, D is an external command and requires the file D.COM to run. If D.COM is not present on your diskette or hard disk, you'll get the error message:

Bad Command Or File Name.

KCOPY--a file copy program

KCOPY enables the user to designate specific files and directories to copy. It is also helpful in searching through a disk, especially a hard disk with multiple subdirectories.

KCOPY functions within the MS-DOS system, so it's important to understand how MS-DOS works. Before proceeding further, you should review the definitions of directories and paths. You should also be comfortable with the DIR, COPY, CHDIR and MKDIR commands, and have practice using wildcards (explained earlier in this manual). Refer to the *MS-DOS User's Guide* for a more complete explanation. Pay special attention to the COPY command.

The KAYPRO KCOPY program uses the same syntax as the COPY command, with two important differences:

1. KCOPY allows the user to copy a file onto itself,
   and
2. KCOPY copies *everything.*

KCOPY can copy entire directories, as well as individual files or subdirectories. If you use KCOPY to copy a complete directory tree to a blank formatted diskette, it will create the same directories on the blank diskette. When you designate a directory to be copied, and the target diskette does not contain that directory, KCOPY will create it for you.

If you have two diskette drives, put Working Diskette #1 in drive A, and a blank formatted diskette in drive B. From the system prompt A>:

Type: KCOPY A:*.* B:
Press *Enter*

For K286i-C users, KCOPY is located in the UTILITY subdirectory. With a blank formatted diskette in drive A, from the root directory:

Type: KCOPY C:*.* A:
Press *Enter*

If you were using COPY, the copying process would begin immediately. Instead, KCOPY stops and allows you to select which files and directories to be transferred. You will see a menu of function keys with explanations at the top of the screen, and a listing of files in the root directory at the bottom.

The Columns

Between the list of files and the left side of the KCOPY frame there are five columns. Each column designates an attribute of the file on that row. From left to right, the columns show whether files are marked, archive, hidden, read-only or system files. If a column is blank, the file does not possess that attribute.

Marking Files
On the far left hand side of the KCOPY frame, you will see a column of M's. This means every file and directory is marked. If you were to start copying now, every file and directory would be copied.

Scrolling Through Files And Directories
Use the down arrow key to move through the files, the up arrow key to move up. Pressing the *Pg Up* key scrolls up a screen at a time, pressing the *Pg Dn* key scrolls down. Pressing the *Home* key takes the highlighted bar to the top of the list, the *End* key takes it to the bottom.

Another column on the right side of your screen shows the size of each file. If the highlighted bar is on a directory name, you will see "- - -" in the right column. Pressing the *right arrow key* will then display a list of all the files and subdirectories in the highlighted directory. To return to the original directory display, press the *left arrow key*.

The Function Keys

F1 Mark Highlighted Name For Copy

Use this key to mark a file or directory for copying.

Alt-F1 Unmark Highlighted Name

Use this key sequence to unmark a file. Files which are unmarked will not be copied. If you have sixteen files on one diskette, and want to copy twelve of them to another disk, you would unmark the four unwanted files before starting the copy operation. The same procedure works for copying directories. If you unmark a directory, then that directory (and everything in it) will not be copied.

F2 Mark All Names

This option is used to mark every file and directory on a diskette.

ALT-F2 Unmark All Names

This option allows you to unmark every file and directory on a diskette. If a diskette contains many files and you need to copy only a few, use ALT F2 to unmark all the files and directories, then mark those you wish to copy.

F3 Mark By Type

This option allows you to mark names according to type. When you press **F3**, you see the prompt **What file type letter(s)?** There are four types: *directories, hidden files, archive file*s, and *system files*.

Directories: By entering a backslash (\), you tell KCOPY to mark only directories, not the files within them.

Hidden Files: Mark all hidden files by entering an **H**.

Archive Files: Notice the column directly to the left of the filename column. The **A** stands for *archive*. Backup programs such as KCOPY normally turn off the archive attribute after they make a backup copy of the file. KCOPY gives you the option of maintaining the archive attribute. Before each copy operation you will see this prompt:

Clear archive bit after copying?

If you answer *Yes* and copy a file, the file will cease to be an archive file, and the archive column will no longer display an **A**. If you want to clear the archive bit, you must first make sure the source diskette is not write-protected.

System Files: By entering an **S**, you tell KCOPY to mark only the files that make up the operating system (like MSDOS.SYS). If the file is a system file, the column to the left of the name column will contain an **S**.

Alt-F3 Unmark By Type

This allows you to unmark files using the procedure described under *F3 Mark By Type*. Just use **ALT F3** instead of **F3** to unmark. Otherwise, the procedure is the same.

F4 Mark By Pattern

This option allows you to mark files using wildcards (see wildcards on page 7-5). For example, if you want to mark every file which has a .COM extension, press **F4**, and at the prompt:

Type: *.COM
Press *Enter*

Alt-F4 Unmark By Pattern

This allows you to unmark files using the procedure described in "F4 Mark By Pattern." Just use **ALT F4** instead of F4 to unmark by pattern.

F5 Start Copying Files

Press the **F5** key to begin the copy operation.

F6 Quit KCOPY

Pressing the **F6** key ends KCOPY and returns to MS-DOS.

F7 Replace Source Disk

Pressing the **F7** key enables the user to change the logged disk drive. If you wish to switch diskettes or access another drive or directory, use this option.

F8 Transfer Files Over Data Link

This option allows the user to transfer marked files and directories through the serial port to another computer. KCOPY will automatically send these files. The receiving computer should be equipped with telecommunications software which should be set to the following parameters.

Protocol:	**XMODEM/B CRC**
Baud Rate:	**9600**
Data Bits:	**8**
Stop Bit:	**1**
Parity:	**NONE**

XMODEM/B protocol will not allow the transfer of subdirectories or directory structures. If you need to copy subdirectories or directory structures over a data link, run the KAYPRO program CATCH.EXE on the receiving computer instead of telecommunications software. At the system prompt of the receiving computer:

Type: CATCH
Press: *Enter*

Note:
The **F8** option is not designed to work with modems. It works only with a direct computer-to-computer connection.

The KCOPY Switches

Switches are characters placed at the end of the command line that cause KCOPY to operate in a specific manner. These are the switches.

/A Copies all archive files and clears the archive bit.

/B Marks only archive files.

/C Copies all files and directories.

/M Marks according to specified wildcard pattern.

/U Unmarks according to specified wildcard pattern.

/S Allows the user to swap diskettes before KCOPY runs.

/X Copies all files and directories to a data link.

The /A, /C, and /X options bypass the KCOPY menu and start copying immediately. For example, if you want KCOPY to bypass the menu and begin copying, place the /C switch at the end of the command:

Type: **KCOPY A:*.* C: /C**
Press *Enter*

This command copies every file and directory from drive A to drive C, without displaying the menu or file and directory list.

Escape and Control C
To stop any operation at any time, press either the *Esc* key, or press the *Ctrl* and the C keys simultaneously.

LOCATE --a file-finding utility

LOCATE will help you find a file on your hard disk, regardless of where the file is stored or in which subdirectory you begin your search. LOCATE can also be used to find subdirectories. The syntax is:

LOCATE *[-switch]* *<filespec>*

Switch may be one of the following:

d Disregards subdirectories that match .

s Shows directories, but does not display the trailing backslash (\) at the end of the directory name.

? Typing **LOCATE -?** at the DOS prompt gives you the first of two help screens. Press the spacebar to view the second screen.

m Disables the pause between help screens.

Filespec may include the wildcard characters * and ?. LOCATE will find subdirectories as well as files and programs. It can also find duplicate files, regardless of their location.

Let's experiment with LOCATE. To find out how many files begin with the letter **r**:

Type: LOCATE r*.*
Press *Enter*

If the list is more than one screenful, pipe LOCATE through MORE.COM. See Chapter Seven, "Advanced Usage," and your *MS-DOS User's Guide* for more detailed information. LOCATE has a built-in help facility, similar to that of CHATTR. If you type **LOCATE** at the DOS prompt, you should see:

Locate ver X.XX Kaypro Corporation

Usage:
Locate [-dsm?] [d:] [pathname] filespec [...]
Locate -? for extra help

MAXCYL--to protect your hard disk

If you leave a cassette tape in a tape player without rewinding the tape, contact between the tape and the head can cause damage. A similar problem occurs when the drive head comes in contact with the hard disk. The risk of damage is especially high when you transport your system. To guard against this damage, Kaypro has provided the MAXCYL.COM program. It is located in your \UTILITY directory. Run MAXCYL before transporting your system. It will park the drive head on the innermost cylinder of the disk where it is less likely to be damaged.

Chapter Nine
Video With the K286i

Chapter Nine
Video With the K286i

There are two important parts of your computer system which display information on the screen. The first (and obvious) part is the *monitor*. This is the video screen which connects to the computer. There are many different types of monitors which can be used with the K286i. The most common types are *monochrome*, which show only light or dark shades of the same color (usually green or amber), *CGA* (color graphics) monitors, which show color displays, and *EGA* (enhanced graphics) monitors, which also show color, but give much more detail (resolution) than the standard color monitors.

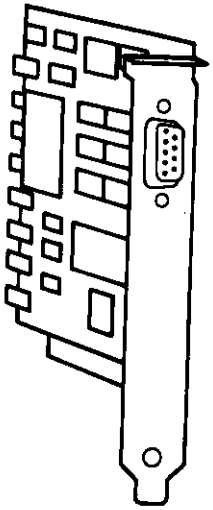
The second part of your video system is the *adapter card*, sometimes called an *adapter board*. The adapter card converts signals from the computer so that they can be displayed as visible characters on the screen. It is important that the adapter card and monitor be compatible and that the switches on the card are set properly. In addition, when you run the SETUP program, you must set the Display section to match the type of adapter card you are using.

Although an adapter card is not shipped with the computer from the factory, your dealer can equip the KAYPRO 286i with a variety of different cards, including (but not limited to) the KAYPRO *Multi-Video Adapter*, the KAYPRO *Enhanced Graphics Adapter*, and the KAYPRO *EGA Half Card*. This chapter will give a brief description of these adapter cards.

Caution:
Specifications for video adapter cards are often subject to change, and may differ from those in this manual. For exact specifications, consult the documentation supplied by the card manufacturer.

The KAYPRO Multi-Video Adapter

The KAYPRO Multi-Video Adapter can, by changing certain settings on the board, produce the video characteristics of the IBM Color/Graphics Adapter (CGA), the IBM Monochrome/Display Adapter (MDA), and the Hercules Graphics Card. It also has a Color Graphics Emulation Mode and can display 132 columns of text in both monochrome and color.



This adapter card can be set to one of four modes: *color emulation* mode, *monochrome text* mode, *monochrome graphics* mode, or *color graphics* mode. Each mode is explained below.

Color Emulation Mode

One of the most useful features of this adapter card is its ability to simulate color graphics on your monochrome monitor. It runs color graphics software on a monochrome monitor by automatically converting the color signals into varying shades of green (or amber, depending on your monitor). This is helpful for running certain graphics programs and games specifically written for color monitors.

In *color emulation mode* the KAYPRO video board will function like an IBM Color Graphics adapter. If your board is set to emulation mode, you should install your software for the IBM Color/Graphics Adapter. For example, if you were installing Lotus 123 (Release 2) you would run the Lotus *Install* program and choose the IBM Color Card as a display type. Emulation mode displays the high-resolution monochrome character set (letters, numbers), and is also capable of full screen graphics.

Monochrome Text Mode

Monochrome text mode displays the high resolution monochrome character set on a monochrome monitor. In this mode, the KAYPRO Multi-Video Adapter functions exactly like an IBM Monochrome/Display Adapter. You will have

crisp, high-resolution text, but graphics capability will be very limited. Graphics software written for the IBM Color/Graphics Adapter or the Hercules Graphics Card will not run under this mode.

Monochrome Graphics Mode

The KAYPRO Multi-Video Adapter functions exactly like the Hercules Graphics Card for the IBM Monochrome Display. This mode, with the use of special software, will allow you to run certain color graphics on a monochrome monitor. If you have software configured for a Hercules graphics card you should use this mode. Graphics software written for the IBM Color/Graphics Adapter will not run under this mode.

Color/Graphics Mode

This mode will run all IBM Color/Graphics programs. In this mode the KAYPRO Multi-Video Adapter will function exactly like an IBM Color Graphics adapter. You may use either a standard color (RGB) monitor, or a composite monitor designed for use with the color graphics adapter.

Mode-Switching Software: MS.COM

Where do I find MS.COM?
The KAYPRO 286i comes with a program called **MS.COM** (Mode Switching). This program will change the video operation of the KAYPRO Multi-Video Adapter to any of ten different modes. K286i-C owners will find MS.COM in the \UTILITY directory. K286i-A owners will find the program on Working Diskette #2 in the \VIDEO directory.

Note:
MS.COM is *not* designed to be used with any video adapter except the KAYPRO Multi-Video Adapter. It will **not** work with any other video adapter card.

Changing video modes is a four-step procedure:

1. Run the MS.COM program.
2.. Choose the desired video mode from the menu.
3. Change monitors if necessary.
4. Exit the MS.COM program.

Note:
When you switch video modes, make sure that all your software programs (particularly RAM-resident ones) are compatible with the new video mode.

The following gives an example of the procedure for switching to monochrome mode and then switching to color graphics emulation.

1. If you have a K286i-A, place your MS-DOS UTILITIES diskette in the A drive, if you have a K286i-C, change to the \UTILITY subdirectory. Then from the system prompt:

Type: MS
Press *Enter*

2. A menu that looks something like this will appear:

1. Monochrome Text 80x25 - MT
2. Monochrome Text 132x25 - M25
3. Monochrome Text 132x44 - M44
4. Monochrome Graphics 1 page - MG1
5. Monochrome Graphics 2 pages - MG2
6. Emulation Text - E80
7. Color Text 80x25 - C80 0
8. Color Text 132x25 - C132
9. Exit to DOS

10. Monochrome 132 columns screen adjustment
11. Color 132 columns screen adjustment

Enter Option : _

3. Since you are switching to monochrome, choose **Monochrome Text 80x25:**

Type: 1
Press *Enter*

This will change the video mode to monochrome. The characters will appear the same. There are some differences, however. Monochrome Mode uses the same monochrome characters but will not display either monochrome or color graphics. If you were to run a program requiring color graphics it would not operate under this mode.

4. To change back to emulation mode:

Type: MS
Press *Enter*

5. The MS menu will appear. This time choose Emulation Text:

Type: 6
Press *Enter*

This is the basic procedure for switching video modes. If you are switching between monochrome and color monitors, the program MS.COM will stop and display this text:

Directions to change to a Color Monitor
1. Disconnect Monochrome Monitor
2. Hit any key when ready
3. Connect Color Monitor when beep
**** Use Ctrl-C to exit without changes**

Caution:
Following these instructions is very important because the monitor may be damaged if the wrong signals are sent to a monitor (color to monochrome or monochrome to color).

There is an option in the menu (number three) to change the video display to monochrome 132 columns by 44 lines. The KAYPRO 286i design may not support the use of 44 lines on a standard monochrome monitor. Since it is easier to read, most users prefer the standard 80 column by 25 line display.

About Hercules Monochrome Graphics

If you plan to use the Monochrome Graphics mode (which emulates the Hercules Graphics Card), you must choose an option which allocates either one or two pages of memory for monochrome graphics.

- Choose **1 page** (option 4) if you are installing an additional video adapter card.

- Choose **2 pages** (option 5) if you will use Lotus 123 (or similar programs which generate graphics) in monochrome graphics mode. If you use this setting for Lotus you must use the Lotus *Install* program to configure Lotus for use with a Hercules graphics card.

Bypassing the MS.COM Menu

Once you become familiar with the MS.COM program, you may want to speed up the process of changing video modes. You may also want to include MS.COM commands in a batch file (more on batch processing in the *MS-DOS User's Guide*) so that video mode will be switched automatically. For this reason, Kaypro has provided an alternate method of using MS.COM. To the right of items 1 through 8 on the MS.COM menu you will see a code (Example: **MT** for #1, **M25** for #2, etc.) which corresponds to that option.

Using MS.COM Control Codes to Change Video Mode

To switch from emulation mode to 80x25 monochrome mode with a single command:

Type: MS MT (you must be at the system (DOS) prompt)
Press *Enter*

The MODE Command

MODE.EXE is another program used to switch video modes. While MS.COM is supplied by Kaypro, MODE.EXE is part of the MS-DOS Utilities library (It's in the \UTILITY directory on the Model C and on Working Diskette #1 on the K286i-A) . MODE.EXE enables you to change the video output from the standard monochrome display to a color or black and white display. You can use this command if you change to a different type of monitor, and need to set the video output to match it.

MODE also enables you to change the number of columns and rows your screen displays from the standard 80 columns by 25 lines to one of the options shown below. To use the MODE command at the DOS prompt:

Type: MODE *display*
Press *Enter*

Display is the code for the display you will be using. Below is a list of display options:

Display	Selects
MONO	**Monochrome 80 columns by 25 rows.**
BW40	**40 by 25 black and white text mode on a color monitor.**
BW80	**80 by 25 black and white text mode on a color monitor.**
CO40	**40 by 25 color text mode.**
CO80	**80 by 25 color text mode.**
40	**40 columns in the current mode.***
80	**80 columns in the current mode.**

* 40 column mode not available in monochrome.

Example: To switch from monochrome to color mode and retain the same screen format:

Type: MODE CO80
Press *Enter*

The Mode command also enables you to change the the operating mode of the parallel or serial port, and reroute the printer output. See the *MS-DOS User's Guide* for detailed information on the MODE command.

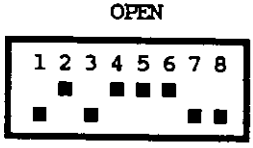
Switch Settings on the Multi-Video Adapter

DIP switches are tiny switches located on the Multi-Video Adapter itself. To change settings on these switches, you must first unplug the power cord and remove the computer case. (For instructions on removing the case, see Chapter 10, Technical Information.)

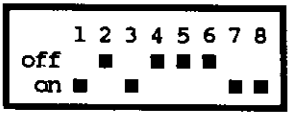
To use a monitor other than the KAYPRO Monochrome Monitor, you may need to change the DIP switches on the the adapter card. This will match it to the monitor you are using. The DIP switches determine the video signal the adapter card sends to the monitor.

The KAYPRO Multi-Video Adapter is five inches long (half card length) and is located in one of the card slots inside the computer. Once you have removed the computer case, the easiest way to locate the Multi-Video Adapter is to look at the rear panel of the computer. Look for the DB-9 connector which connects to your monitor. The circuit card attached to the DB-9 is the Multi-Video Adapter card.

The DIP switch block on the KAYPRO Multi-Video Adapter is located on the top edge of the card, near the juncture of the card and the slot cover. The block will either look something like this:



Or it will look like this:



These two switch blocks function in exactly the same manner. They are only labeled differently. When setting DIP switches, remember:

OPEN = OFF
CLOSED = ON

Change the switch settings according to the chart below:

Note:
Before setting DIP switches, look carefully at your Multi-Video adapter card. If it shows the logo "Graphics Solutions Plus" engraved on the component side of the card, do NOT use the settings for the First Version. Instead, use the settings on the next page marked "Second Version."

DIP Switch Settings - Multi-Video Adapter/First Version

Video Mode	Switch Settings							
	1	2	3	4	5	6	7	8
Monochrome	ON	OFF	ON	OFF	OFF	OFF	ON	ON
Color (CGA)	OFF	ON	OFF	OFF	ON	OFF	ON	ON
Composite*	OFF	ON	OFF	ON	ON	OFF	ON	ON
Composite**	OFF	ON	OFF	ON	OFF	OFF	ON	ON
Emulation	OFF	OFF	ON	OFF	OFF	OFF	ON	ON

* Color **Monochrome

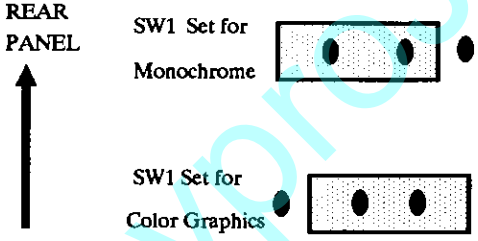
DIP Switch Settings - Multi-Video Adapter/Second Version

Video Mode	Switch Settings							
	1	2	3	4	5	6	7	8
Monochrome	ON	OFF	ON	OFF	OFF	ON	ON	ON
Color (CGA)	OFF	ON	ON	OFF	ON	ON	ON	ON
Composite*	OFF	ON	OFF	ON	ON	ON	ON	ON
Composite**	OFF	ON	OFF	ON	OFF	ON	ON	ON
Emulation	OFF	OFF	ON	OFF	OFF	ON	ON	ON

*Color **Monochrome

Note:
If you set the switches on the Multi-Video Adapter card for any of the color modes (CGA or composite color) you must also set the switch at **SW1** on the main processor board for **color.** If you set the switches on the Multi-Video Board for any of the monochrome modes (monochrome, composite monochrome, or emulation) you must also set the switch at **SW1** on the main processor board for **monochrome.**

Jumper at SW1



Setting Jumper SW1 on the Main Processor Board

If you change from a color monitor to a monochrome monitor (or vice versa) you must set the jumper at **SW1**, near the power supply. This jumper selects whether the computer will boot with Color/Graphics or Monochrome as the default video mode. With the jumper positioned towards the power supply, Color/Graphics is selected. When the jumper is positioned away from the power supply, monochrome is selected as the default mode.

The KAYPRO EGA Adapter

The KAYPRO EGA Adapter performs a function similar to that of the Multi-Video Adapter, and will work with three types of monitors: Enhanced Graphics (EGA), Color Graphics (CGA), or Monochrome. Unlike the Multi-Video Adapter, however, it allows you to use higher-resolution Enhanced Graphics (EGA) monitors which display text and graphics in greater detail than standard (CGA) color monitors.

The EGA Adapter Card is a full-length (12.5 inches) card with has a block of five switches adjacent to the nine-pin video connector.

Note:
Since settings may be changed in subsequent versions of this adapter, you should use the manufacturer's documentation included with the adapter card to verify switch and jumper settings before operation.

These switches determine the type of video signal sent to the monitor. If you look carefully at the switch block, you will see markings which show whether the switch is ON or OFF. The following table shows the switch settings for each video mode.

Video Mode	Switch Settings			
	SW2	**SW3**	**SW4**	**SW5**
Monochome	OFF	OFF	ON	OFF
Color(CGA) 40 x 25	ON	OFF	OFF	ON
Color(CGA) 80x 25	OFF	OFF	OFF	ON
EGA	OFF	ON	ON	OFF

Once the DIP switch settings have been made, you must set a jumper on the EGA Adapter to match the type of monitor you are using. Place the adapter card on a table with the component side up. A careful examination will reveal that each component on the adapter card is identified with a code number which is stenciled into the card itself. Just below and slightly to the left of the

EGA Adapter Jumper Settings

Monochrome/CGA **EGA**

DIP switches there are three upright posts at position **P03**. This is called a *jumper*.

Notice that two of the three posts are covered by a plastic block. This block connects the two posts and completes a circuit which determines the video signal sent to your monitor. The illustration below shows the proper setting for each monitor. If you have an EGA monitor, use the setting labeled *EGA*. If you do not have an EGA monitor, use the setting labeled *CGA/Monochrome*.

Note:
There are similar jumpers located at positions P01 and P04 on the EGA Adapter. Do not change the factory settings on these jumpers.

The EGA Half-Card

The unique design of the EGA Half-Card allows you to run software written for any of the available video modes on any type of monitor. This means that you can use EGA-only software even though you have a monochrome (or other non-EGA) monitor. In addition, the EGA Half-Card comes with a menu-driven program that allows you to switch video modes with a few simple keystrokes.

The type of signal the EGA Half-Card sends to your monitor depends on the switch settings on the card and the mode-switching software. What you actually see on the screen depends on many factors, including your monitor and the software you are using.

Switch Settings

At the top of the EGA Half-Card is a small window with a block of eight switches. The switch bank may either read OPEN and CLOSED, or ON and OFF. (Remember that OPEN means the same as OFF.) The following tables show basic switch settings for each different type of video signal.

Note:
These settings are to be used only if the EGA Half-Card is the only video adapter card installed in your computer. If you have more than one video adapter card in your computer, you should consult the card manufacturer's documentation for BOTH adapter cards for the proper settings. All switch settings shown in this manual are subject to change at any time. Refer to the switch settings shown in the card manufacturer's documentation for the most recent information.

The first four switches (SW1 through SW4) determine the default video mode. This tells the EGA Half-Card what video mode to display when you turn on your computer.

Default Mode	SW1	SW2	SW3	SW4
MDA	OFF	OFF	ON	OFF
CGA (40 X 25)	ON	OFF	OFF	ON
CGA (80 X 25)	OFF	OFF	OFF	ON
EGA (normal)	ON	ON	ON	OFF
EGA (enhanced)	OFF	ON	ON	OFF

The next three switches (SW5 through SW7) must be set to match the monitor you are using. Avoid improper settings, as this can cause damage to the monitor or adapter card.

Monitor	SW5	SW6	SW7
EGA	ON	OFF	OFF
CGA	ON	ON	OFF
MDA	OFF	ON	OFF
M/S	ON	OFF	ON

The last switch (SW8) is a special switch that allows certain features of the EGA Half-Card to be enabled or disabled automatically. When SW8 is OFF, (preferred position for the standard K286i) you must use the SUPERSWITCH program supplied with the card to enable these features.

Abbreviations:

EGA (normal): Enhanced Graphics Adapter (8 X 8 character resolution)
EGA (enhanced): Enhanced Graphics Adapter (8 X 14 character resolution)
MDA: Monochrome Display Adapter
CGA: Color Graphics Adapter
M/S: Multi-Sync type monitor

Note:
If you experience an unusual display with SW8 set ON, try setting it OFF and changing modes with the SUPERSWITCH program.

Changing Video Modes - The SUPERSWITCH Program

SUPERSWITCH is a video mode switching program that allows the user to control the video signals sent to the monitor without physically changing the switch settings on the EGA Half-Card.

If you are using software (example: Lotus) configured for specific video modes, you may need to change the configuration if you use SUPERSWITCH to change video modes. If you are using RAM- resident software, make sure it is set to the proper video mode when you use SUPERSWITCH. A RAM-resident pop-up desktop program can lock up the system if not installed to match the video mode you have chosen with SUPERSWITCH.

To run SUPERSWITCH (usually in the \UTILITY subdirectory on your hard disk) type SMS from the system prompt and press Enter.

The SUPERSWITCH menu should look like this:

1. Monochrome Text 80 X 25 - M80
2. Color Text - C80
3. Color TExt 80 X 25 Enhanced - CE80
4. 132 Columns -132
5. Enable Enhanced Features - ENAB
6. Exit to DOS
7. 132 column screen adjustment
Current Mode is:___
Enter option:

By selecting different modes in SUPERSWITCH, you can run programs written for different monitor types without changing switch settings or changing monitors.

Bypassing the SUPERSWITCH Menu

If, like most experienced users, you dislike menu-driven commands, you can use SUPERSWITCH's keywords, which are located at the right side of the SUPERSWITCH menu. For example, you can use **M80** to enable the Monochrome Text mode. These keywords can be incorporated in batch files which will automatically switch the video mode when you load a program.

Special considerations

Programs written for Hercules Graphics are allocated a full two pages of graphics memory if the EGA Half-Card is the only video adapter card in your computer. If there is a second card, only one page will be allocated.

The 132-column mode is supported by only a limited number of software packages at this time.

Chapter Ten
Technical Information

Chapter Ten
Technical Information

This chapter consists of two major sections: "Troubleshooting" (Software and Hardware), and "Tech Facts". The first section explains problem-solving techniques while the second outlines basic technical data which affects your everyday use of the computer.

This chapter is not intended as a source of detailed technical data. For this information, the user should consult the *K286i Technical Manual*.

Troubleshooting Your System

What Is Troubleshooting?
Troubleshooting is the process of examining your computer system to determine what is wrong. By examining each possible source of the problem, you can use deductive reasoning to eliminate them one by one until you (hopefully) isolate the cause of the problem and correct it.

Let's assume that your printer has suddenly decided to start printing in Chinese (at least the strange characters look like Chinese to you). The problem can be in the computer, the software, the printer cable, or in the printer itself. Using the logical method of troubleshooting, you should check the simplest things first. Often the solution is as simple as a loose cable or a printer that's not on-line.

Caution:
Under the terms of the KAYPRO warranty, the owner should not attempt to remove the computer cover as this voids the warranty. See your authorized KAYPRO dealer for warranty service.

The KAYPRO 286i is subjected to rigorous testing procedures to eliminate defects before it leaves the factory. Hardware failures are extremely rare and most problems are usually the result of simple errors. Using the methods outlined below, you can usually find the problem yourself.

On page 3 there is a table listing several common problems, their possible causes, and appropriate remedies. Once you have a handle on the problem, look up the subject in the index and try the suggested remedy. If the computer still doesn't function properly, contact a KAYPRO dealer for assistance.

The simplest answer is usually the correct one. After you are sure the simple things are not causing the problem, check the more difficult ones.

Software Problems

It's sometimes harder to troubleshoot software problems than those caused by computer hardware. There are many programs on the market, some of which are extremely complex. When you encounter a software problem, try to follow these guidelines.

1. Did you enter the command incorrectly? Did you forget a parameter, drive designation etc.? (Example: If you try to edit a WordStar file which is on a diskette in the A drive, and WordStar's default drive is C, you must type A: before the filename. If you forget the "A:", WordStar will only look at the C drive and will not be able to find your file.)

2. Make sure you are not asking the program to do something it was not designed to do. Read the software manual carefully and make sure that the program is capable of performing the task.

3. Do you have all the files necessary to run the program? (Example: WordStar requires three files to operate: WS.EXE, WSMSGS.OVR and WSPRINT.OVR. If any of these files are missing, you will not be able to run the program correctly.)

4. Make sure you have the correct MS-DOS files required for your software. Some programs require the MS-DOS file ANSI.SYS, and a special text file called CONFIG.SYS. Look up ANSI.SYS and CONFIG.SYS in your software manual index and see if either file is required.

5. Some programs only work with specific versions of MS-DOS. For example, if you boot up the computer with MS-DOS version 3.2 and attempt to use the MS-DOS 2.X version of FORMAT.COM, you may get an error message stating "INCORRECT DOS VERSION".

6. Read your software manual. If you use the right technique, you can usually find the information you need. Use the manual's index to track down the subject you need. (Example: If you're having trouble printing a file, look in the index under "printing," "files," or "text." If you still can't find the information, look under "documents," "reports," or "letters," it should be in one of these sections.)

Common Problems and Their Solutions

SYMPTOM	POSSIBLE CAUSE	REMEDY
No Power. (Power light does not come on.)	Power cord not plugged in.	Plug in power cord.
	Power switch off.	Turn on power switch.
No Video.	Monitor power cord not plugged in.	Plug in monitor power cord.
	Monitor turned off.	Turn monitor on.
	Monitor signal cord not plugged in.	Plug in the signal cable.
	Monitor signal cord plugged into wrong connector.	Plug signal cable into correct connector.
	Wrong video mode.	Switch video mode
Computer will not boot. (Boot disk failure)	Disk not fully in drive.	Insert diskette fully into drive and close the drive door.
	Disk placed in drive incorrectly.	Remove disk and re-insert with label up and access slot foreward.
	Disk has become damaged.	Make a new copy from the master diskette.
Computer will not boot. (Non-System or disk error)	Not a system disk.	Replace the diskette with a system diskette.
No response to keyboard.	Keyboard unplugged.	Plug the keyboard in.
	Keyboard security switch locked.	Unlock security switch.

7. If you still have not solved your software problem, consider joining a user's group which discusses this program. Many cities have user's groups devoted to popular programs such as AutoCad, Lotus 123 or DBase III. Some of the members may have experienced similar problems and will be happy to share their ideas with you.

Possible Sources of Hardware Problems

The 10 MHz Clock Speed
The K286i has a clock speed of 10 MHz. In simple terms, this means it operates more than twice as fast as a standard IBM PC (which runs at 4.77MHz). This is a tremendous advantage in working with most software, particularly desktop publishing and graphics programs which are very computation intensive.

However, certain programs have trouble running at 10 MHz, notably games and communications programs which rely on clock speed. As software programmers begin to take advantage of the K286i's speed, this problem will gradually disappear. Until then, be sure to run any new software on your K286i before you purchase it. Most software that is advertised as "AT compatible" should run on the K286i with no difficulties.

Certain aftermarket circuit boards will not work at 10 MHz. This is because they simply cannot keep up with your KAYPRO 286i running at 10 MHz. Before you buy a circuit board from a third-party manufacturer, make sure that it can run at 10 MHz and is compatible with the 80286 processor. If it is advertised as "AT compatible," it should work with the K286i.

Parallel and Serial Ports

Most devices (except for the video monitor and keyboard) are connected to your K286i via the parallel or serial ports. These *ports* are connectors on the rear panel of your computer (see rear panel diagram page 2-2). Most printers are connected to the parallel port while other devices (Mouse, external modem, light pen) are connected to the serial port. The standard K286i is equipped with one parallel and one serial port.

Some computers have several parallel and serial ports. For reference, parallel ports are designated LPT1, LPT2, and so on. The primary port is usually designated LPT1. Serial ports are similarly labeled COM1, COM2, etc. When installing software, make sure that you have specified the proper port. (Example: If you install a word processor and set the printer port to LPT2

while your printer is connected to LPT1, you will not be able to print your files.)

The Keylock

If the computer is apparently disregarding the keyboard, check the keylock on the front panel. It should be in the upper position (pointing toward the icon of an unlocked padlock). If it is in the lower (locked) position, the keyboard is disabled. If the keyboard still does not function, make sure the keyboard plug is securely inserted in the connector on the rear panel.

The Disk Drive Indicator Lights

Each disk drive on the K286i is equipped with an indicator light. The diskette drives have a small red LED located above the diskette slot and the hard disk has a red LED located on the front panel near the keylock. These indicators will illuminate when the drive is reading or writing data to or from the disk. Watch these indicators when performing operations which read or write to a disk--they can help pinpoint a problem. (Example: If you save a WordStar text file to drive A, the LED on drive A should light briefly when the file is stored.) You should also be able to hear the drive motor as it accesses the disk. If this does not happen, the system may not be functioning properly.

DOS Error Messages

Another source of clues in hardware/software errors is the MS-DOS error message library. Many problems are accompanied by these messages which range from the relatively simple ("File Not Found") to the cryptic ("Divide Overflow"). The knowledgeable user can trace problems to their source using these messages. See your *MS-DOS User's Guide* for information on these error messages and what they mean.

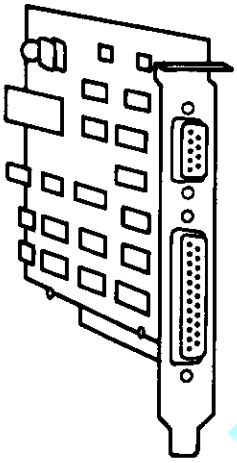
Tech Facts K286i

These are the specifications of the KAYPRO 286i:

Feature	K286i-A	K286i-C
CPU	80286	80286
Clock speed	10 MHz	10 MHz
80287processor	Socket	Socket
Base Memory	640K	640K
Main board RAM capacity	640K	640K
Maximum RAM capacity	16 MB	16 MB
360K diskette drive	Option	Option
1.2 Meg. diskette drive	Std. (1)	Std.(1)
40 Meg. fixed drive	Option	Std.
Tape drive	Option	Option
Serial interface (9-pin)	Std.	Std.
Parallel interface	Std	Std.
Security lock	Std	Std.
Available expansion slots	5	5
Total expansion slots	8	8

Connecting A Printer

These are the printer ports, located on the rear panel of the computer.



Serial Printers

A serial printer receives data from the computer one bit at a time. Serial printers are not used as often as parallel printers, except in systems where the printer must be located over ten feet from the computer. Because of the nature of the signal, serial printers can be located up to several hundred feet from the computer.

The KAYPRO 286i sends serial data using the RS-232C protocol. It is transmitted through the serial port located on the rear panel of the computer. This port uses a nine-pin connector called a *DB-9*.

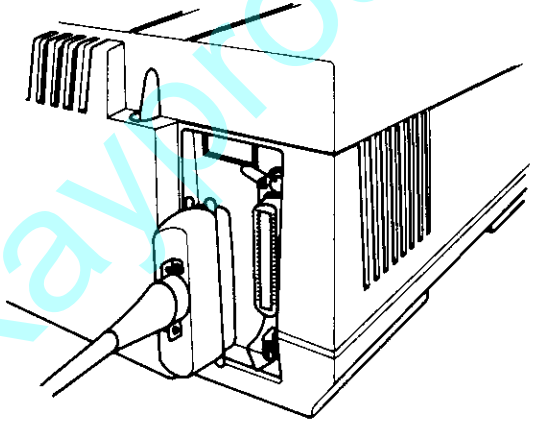
Unfortunately, there is little standardization of serial printer cables. If you have a serial printer, you will need to have a cable designed for your specific application. The technician that fabricates your cable will need the serial port pin assignments, which are listed in the section of this chapter titled *Serial Devices.*

Parallel Printer

A parallel printer receives data from the computer eight bits at a time. Because of the nature of the parallel data signal, a parallel cable should be no more than ten feet long. If the printer cannot be located within this distance, a serial printer and cable may be necessary.

Parallel printers are the most popular printers used today. Unlike serial printers, most parallel printers conform to a single standard. Cables and connectors used with these printers are usually interchangeable with other parallel printers.

The KAYPRO 286i sends parallel signals through the parallel port on the rear panel of the computer. This port uses a connector called a DB-25, which has twenty-five pins. The connector on the printer is called a *Centronics* connector, and has 36 pins. To connect the parallel printer cable, plug the Centronics (36-pin) end into the connector on the printer.



Parallel Printer Cable

If your printer has a nonstandard connector or you cannot find a suitable cable, the following pin assignments will allow you to make your own cable. Check your printer manual for information on pin assignments for the printer's Centronics connector.

DB25 Connector (KAYPRO) Pin	Signal	Centronics (printer) Pin
1	Strobe	1
2	Data 0	2
3	Data 1	3
4	Data 2	4
5	Data 3	5
6	Data 4	6
7	Data 5	7
8	Data 6	8
9	Data 7	9
10	Acknowledge	10
11	Busy	11
12	Paper End	12
13	Select	13
14	Auto Feed	14
15	Fault	32
16	Initiate	31
17	Select In	36
18	Ground	34
19	Ground	19
20	Ground	21
21	Ground	23
22	Ground	None
23	Ground	27
24	Ground	29
25	Ground	30

Note: All cables must be shielded in order to comply with FCC regulations.

Serial Devices

Most modern computer systems use parallel printers. This leaves the serial connector on the rear panel open for a serial device such as a modem, mouse, light pen, or serial printer.

Modem serial cables and printer serial cables have different characteristics. If you want to use both a modem and a serial printer, you will need a cable specifically designed for each device.

Please note that Kaypro Corporation makes no guarantees about the suitability of any device for use with the serial interface. Before you purchase any serial device, insist on a demonstration of its operation.

If you want to connect your computer to a serial device, your dealer should be able to supply you with the correct cable. If the proper cable is not available through your dealer, the following pin assignment information should be useful to enable you to make your own cable. Check the manual that came with your serial device for information on its pin assignments.

Serial Port Pin Assignments

Pin	Signal	Signal Direction
1	Carrier Detect	<-----
2	Receive Data	<-----
3	Transmit Data	----->
4	Data Terminal Ready	----->
5	Signal Ground	--------
6	Data Set Ready	<-----
7	Request To Send	----->
8	Clear To Send	<-----
9	Ring Indicator	<-----

Circuit Cards and How to Install Them

A *circuit card* is a plastic board embedded with integrated circuits and electronic pathways. Each card performs a specific function. Devices such as modems, video adapters, and even complete hard disk systems are available on circuit cards. These cards are placed inside the K286i in *expansion slots*. The KAYPRO 286i uses eight expansion slots to support additional circuit boards. Six of these expansion slots accept 16-bit IBM AT compatible cards and two of them are for IBM PC compatible 8- bit expansion cards. The 16-bit slots support a sixteen-bit data bus, and the additional parameters required for IBM PC AT compatibility.

Installing a card is usually a simple procedure. However, it does involve working with some delicate parts of your system. If are unfamiliar with these procedures, you may prefer to have a qualified electronics technician do the installation.

Removing The Cover

1. Turn off the computer and unplug the power cord.

2. Prepare the work surface and tools. You should have a wide open surface that does not move or jar easily. You will need a #2 Phillips screwdriver. It helps to have a small container to hold the screws that you will be removing and replacing during the installation.

3. Disconnect the monitor and any other cables connected to the computer.

4. Place the computer on the work surface, and remove the five screws that hold the rear panel in place.

5. While facing the front of the computer, carefully slide the cover toward you.

Important:
Make sure that the center retainer tab (located inside the center portion of the cover) does not snag any of the internal cables as you remove the cover. Slide the cover towards you until it is almost to the end, then lift the cover away from the computer and put it aside.

Installing A Card

1. Open the circuit card package. Read and follow any instructions provided with the card. If it is a full-length card, it must be installed in a full-length slot. A half-length card should be installed in a half-length slot if possible.

Caution: Static Electricity
To avoid damaging internal circuitry you must dissipate any static electric charge that may be present. Do this by touching a grounded metal surface (a water faucet or metal lamp stand will do).

---

2. Remove the expansion slot cover screw, as shown.

3. Carefully remove the board from the anti-static bag.

4. Holding the board by the top edge, carefully insert the board into the slot. If it is a full length board, make sure the other end of the board is in the appropriate support bracket.

5. Replace the expansion slot screw you removed in step two.

6. Replace the computer cover.

Video Pin Assignments for the KAYPRO Multi-Video Board

Most monitors come equipped with a video signal cable. Both RGB and monochrome cables are available from your KAYPRO Dealer. However, the following information is provided for those who need to have a custom video cable made.

RGB Video Connector Pin Assignments

RGB Monitor Connector Pin	Pin Assignment
1	Ground
2	Ground
3	Red Input
4	Green Input
5	Blue Input
6	Intensity
7	Ground
8	Horizontal Sync.
9	Vertical Sync.

Monochrome Video Connector Pin Assignments

Monochrome Monitor Connector Pin	Pin Assignment
1	Ground
2	Ground
3	Not Connected
4	Not Connected
5	Not Connected
6	Intensity
7	Video
8	Horizontal
9	Vertical

Jumpers--How to Set Them

A "jumper" is a simple switch which uses a removable connector to close an electric circuit between two metal pins. Jumpers come in various sizes and shapes.

Main Board Jumper

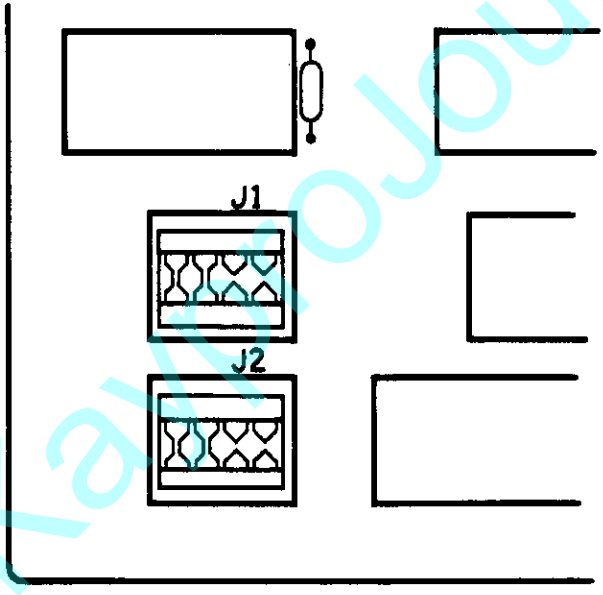
The only jumper on the KAYPRO 286i main board is located at **SW1**, near the power supply. It is used to select either Color Graphics or Monochrome as the default video mode. When the jumper is positioned towards the power supply, Color/Graphics is selected. When the jumper is positioned away from the power supply, Monochrome is selected as the default mode.

Caution
Before performing any maintenance on the KAYPRO 286i make sure that the power has been turned off and the power cord disconnected from the computer.

I/O Card Jumper

There are two jumpers on the K286i Serial/ Parallel I/O Card. This is the circuit card which is attached to the parallel and serial port connectors on the rear panel. These jumpers may be reversed by removing the jumper block and rotating it 180 degrees, then reinstalling.
The first jumper is located at position **J1** on the card and is used to determine whether the serial port will be addressed as COM1 or COM2. The jumper shown is set for COM1.

The second jumper is located at position **J2** on the I/O card and selects whether the parallel port will be addressed as LPT1 or LPT2. The jumper in the illustration is set for LPT1.



Changing the Battery

The KAYPRO 286i is equipped with a battery which allows the CMOS RAM to retain stored information and powers the built-in clock/calendar while the computer is switched off. When the computer fails to retain the proper date and time, the battery should be replaced. Use a Tadiran 3.6 volt battery, which should be available at your KAYPRO dealer. To replace the battery, follow these steps:

1. Run the SETUP program and note the settings (hold down the *Shift* key and press the *PrtSc* key to create a *screen dump* on your printer).

2. Switch off the computer and remove the power cord.

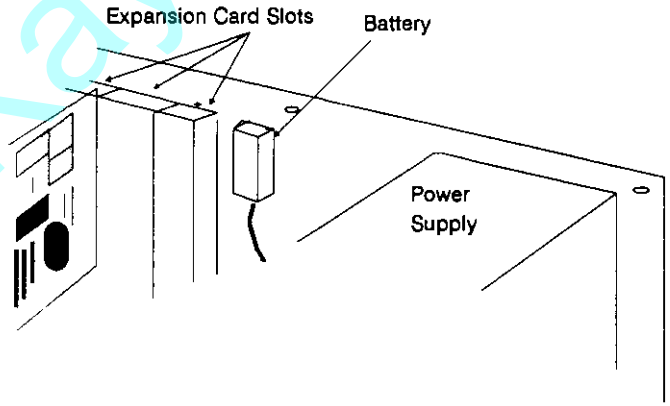
3. Locate the battery, which is attached to the inside of the rear panel by a Velcro© fastener. The battery is mounted in the center of the rear panel, just to the right of the disk controller board.

4. Remove the battery connector by sliding the connector upward until it slides off the pins at location **J21** on the main processor board.

5. Attach the new battery to the fastener on the inside of the rear panel, and slide the connector for the new battery on the pins located at **J21**.

6. Replace the computer cover and plug in the power cord.

7. Run the SETUP program and restore the original settings you noted in Step 1. See Chapter 3 for instructions on running SETUP.



Adding an 80287 Math Coprocessor Chip

An 80287 math coprocessor chip may be required for certain applications, particularly those which perform a great deal of exponential calculation. Computer aided drawing (CAD), graphics, and some desktop publishing applications may require the addition of this chip to your computer. The KAYPRO 286i is equipped with a socket for the 80287. To install the 80287, follow the steps below:

1. Turn of the power switch, unplug the power cord, and remove the computer cover.

2. Find the 80287 socket, which is located on the main processor board and labeled **U-62.** The socket is approximately in the center of the board, just to the left of the hard disk cage.

3. Remove the disk controller board. Follow the steps outlined in the "Disk Controller Board Jumpers" section of this chapter to remove this board.

4. Install the 80287 chip in the **U-62** socket. Make sure the notch on the chip matches the notch on the socket. The chip may be damaged if installed in the reverse position.

5. Replace the disk controller board, reconnect all disk cables, and replace the computer cover.

6. You must run the SETUP program to configure the K286i for the addition of the 80287.

7. After you have run SETUP, reboot the computer. Your 80287 chip is now ready to use.



Appendix A
RAM Disk Utilities

Appendix A
RAM Disk Utilities

What is a RAM disk?
A RAM disk (sometimes called a *Virtual Disk*) is a portion of your computer's Random Access Memory (RAM) which is set aside to function as diskette drive. It is used exactly like any other diskette drive. You can copy programs to and from it. You can use it to store data files.

The advantage of a RAM disk is speed. Information can be stored and retrieved with amazing quickness. This can be a significant help if you use a word processing program that performs frequent disk accesses to read overlays and help messages.

The limitation is that information stored there will be lost when you turn off or reboot the computer. At the end of every work session, you will need to copy your data files to a diskette.

VDISK -- The General Purpose RAM disk

VDISK is a KAYPRO utility program that lets you use part of the 640K RAM as a RAM disk. The advantage of VDISK over RAMDRIVE is that it first uses any RAM above 640K before taking any from the 640K normally available to your programs. VDISK can be used on a K286i with 640K, but will lower the available memory for running applications programs.

The disadvantage of VDISK is that it should not be used for applications that require conformance to the Lotus®- Intel® Microsoft® Expanded Memory Specification (EMS). Those applications should use the RAMDRIVE utility.

RAMDRIVE -- The Special Purpose RAM Disk

RAMDRIVE is a utility program supplied with MS-DOS Version 3.2. The advantage of RAMDRIVE is that it can use expanded memory that conforms to the EMS specification. (Note: On 80286-based computers, RAMDRIVE can also be used to create RAM disks in extended memory above the 1 Megabyte boundary.)

The disadvantage is that for a KPC or PC-30, RAMDRIVE cannot use any of the RAM above 640K. A RAM disk created with RAMDRIVE will occupy

part of the conventional memory below 640K, except for computers with optional extended or expanded memory boards.

Installing a RAM Disk

Both RAM disk utilities consist of a type of configuration file called a *device driver.* For Model C users, the file is copied to the hard disk root directory and invoked by an entry in the CONFIG.SYS file every time the computer boots up. For 286i-A users, the file is copied onto your boot diskettes. Installing a RAM disk, then, is a matter of copying one file and either creating or modifying the CONFIG.SYS file.

The first step is to decide how large a RAM disk you need. With VDISK, the obvious choice is 128K, the amount of "free" RAM at your disposal on a KPC or PC-30. For applications with larger data or overlay files, try a RAM disk of 180-256K. The default values are 180K for VDISK and 64K for RAMDRIVE.

Remember:
With VDISK, the first 128K will always come from RAM above 640K, with the balance coming from conventional memory. With RAMDRIVE, the entire amount comes from conventional memory.

Instructions For installing VDISK on a 286i-A

Let's choose a RAM disk of 128K and work through a sample installation of VDISK:

1. Start your computer with a system diskette containing the file VDISK.SYS in the A: drive.

2. If you do NOT have a CONFIG.SYS file, let's create one:

   Type: COPY CON CONFIG.SYS
   Press: *Enter*

3. You should see the cursor at the far left margin. Now put in the line that will invoke the device driver at boot time:

   Type: DEVICE = VDISK.SYS xxx
   Press: *Enter.*

The xxx parameter is to be replaced by the size of the desired RAMdisk. In this example, you would type **128** in place of xxx to get a 128K RAMdisk. If you leave xxx blank, you will have a 180K RAMdisk.

4. Now let's add an end-of-file character: Press: **F6** (The function key numbered F6)

5. Press: *Enter*

The screen will say:

one file copied

and the DOS prompt (A) will return.

6. If you already have a CONFIG.SYS file, you can edit it as follows:

Type: COPY CONFIG.SYS + CON CONFIG.SYS
Press: *Enter*

7. Then follow steps 3-5 above.

8. To complete the installation, reboot your computer (by holding down the *Ctrl-Alt-Del* keys) and watch the screen. If all went well, you'll see the message that a RAMdisk was installed as your "last available drive" (usually Drive D: on a hard drive system) using xxxK.

Special Instructions For Hard Disk Users:

Escape from the Master Menu by pressing *Esc.*

Change to the root directory:

Type: CD
Press: *Enter*

VDISK.SYS is located in the \UTILITY subdirectory. Copy VDISK.SYS to the root directory.

Type: COPY \UTILITY\VDISK.SYS
Press: *Enter*

Follow steps 2-8 above to install VDISK on your hard drive.

Using RAMDRIVE

Installing RAMDRIVE is very similar. However the syntax of the statement in the CONFIG.SYS file has more options:

device = ramdrive.sys [xxx] [ssss] [dddd] [/E] [/A]

As before, [xxx] specifies the disk size in kilobytes. The default value is 64. The minimum value is 16.

The [ssss] option specifies the sector size in bytes. The default value is 128. Allowable values are: 128, 256, 512, and 1024.

The [dddd] option specifies the number of root directory entries. The default value is 64, the minimum value is 2, and the maximum is 1024.

The /E option lets you use extended memory (above 1 Megabyte) as a RAM disk, if you have an 80286-based machine. If you use this option, you cannot use the /A option.

The /A option lets you create a RAM disk in expanded memory (above 640K) with a memory board that conforms to the EMS specification, if such a board has been installed. If you use this option, you cannot use the /E option.

Appendix B
Current Titles for Further Reading

Appendix B
Current Titles For Further Reading

As of this printing (14 February 1987), the following titles are available at local bookstores and might help you understand your computer more fully. Many other titles may also prove helpful.

Ashley, Ruth and Fernandez, Judi N. *WordStar Without Tears: A Self-Teaching Guide* Wiley Press, 1984

Boyce, Jefferson C. *Understanding Microcomputer Concepts: A Guide For Beginners and Hobbyists* Prentice Hall, 1984

Duncan, Ray *Advanced MS-DOS: The Microsoft Guide For Assembly Language and C Programmers* Microsoft Press, 1986

Ettlin, Walter A. *WordStar Made Easy* Osborne/McGraw Hill, 1982

Froehlich, Robert A. *The IBM PC (and Compatibles) Free Software Catalog and Directory* dilithium Press, 1986

Glossbrenner, Alfred *How To Get Free Software* St. Martin's Press, 1984

Kamin, Jonathan *MSDOS Power User's Guide* Sybex, 1986

Norton, Peter *Inside The IBM PC* Prentice Hall, 1986

Stone, M. David *Getting The Most From WordStar and Mailmerge: Things MicroPro Never Told You* Prentice-Hall, 1984

Wolverton, Van *Running MSDOS: The Microsoft Guide to Getting the Most Out of the Standard Operating System for the IBM PC and 50 Other Personal Computers* Microsoft Press, 2nd edition, 1985

Wolverton, Van *Supercharging MSDOS: Techniques for Customizing Your System for Maximum Performance* Microsoft Press, 1986

Yasuda, Phyllis and Frederick, Vivian *Using Microcomputers* (IBM Version) Benjamin Cummings, 1986

Appendix C
Modifying the Master Menu

Appendix C

Modifying the Master Menu

Why change the Master Menu at all?

Take a moment to think about the programs and MS-DOS commands you use most often. Are there many commands that you have to exit the Master Menu to accomplish? Perhaps you would like to include these commands as Menu items. Have you added another application package that you want to access through the Master Menu? These are all good reasons to change the Master Menu. Another good reason is to change the wording of descriptions and user prompts to wording you feel more comfortable with.

The following files (located in the \MAIN directory) make up the Master Menu. MENUST.BAT is the file that calls MASMENU.EXE. It is also the start up batch file and the only correct way to start or restart the Master Menu. MASPREP.EXE reads MASMENU.TXT and creates the file MASMENU.DAT. MASMENU.DAT is read by MASMENU.EXE. MASMENU.TXT is a text file that contains batch file lines.

Before attempting alterations of the Master Menu, be sure to make backup copies--either on a diskette or special subdirectory--of the Master Menu files. If you've backed up onto diskette, write-protect the diskette and store it in a safe place.

There are three ways to modify the Master Menu. One type of modification can be done by changing the MENUST.BAT file. Another can be done when you run MASPREP.EXE. Still a third type of change is done by editing MASMENU.TXT.

The first method mentioned above will let you put the Master Menu in black and white mode regardless of whether your monitor is monochrome or not. If the Master Menu is difficult to read on your monitor you might want to change MENUST.BAT.

Use WordStar's nondocument mode or some other text editor to edit your version of MENUST.BAT. You don't have to use WordStar but if you do be sure to use the nondocument mode. If you don't use WordStar, use a text editor that stores its files with minimal special formatting codes. A good test to tell whether your editor outputs pure ASCII files or not is to use TYPE to

view the file. If you can read the file using the TYPE command, the text editor is probably all right to use.

The only change that should be made to MENUST.BAT is to the line masmenu. To turn the color off change that line to read **masmenu -b**.

The second method mentioned on page C-1 allows you to turn the right justification off in the menu descriptions. You do this by running MASPREP.EXE. At the system prompt type **MASPREP -J** and press *Enter*. When you start the Master Menu with MENUST, the justification will now be off.

The third method allows you to customize the Master Menu by editing MASMENU.TXT. In this method, simple changes like changing the wording of prompts and program descriptions can be easily accomplished but other changes require a good deal of experience. A good rule of thumb is if you don't understand how something is done, don't change it.

Changing the Master Menu using the third method is not for inexperienced users. You should be very familiar with MS-DOS, your directory structure and your application packages. Some of the areas you should be familiar with are: ASCII files, batch files, COMMAND.COM, subdirectories, text editors, and distinctive features of your application packages. If you are fairly experienced and the changes you want to make are not major, you shouldn't have any difficulty. Be sure to guard against unexpected results by backing up your original version and perhaps your favored modifications.

With a working diskette in the A drive, copy and rename MASMENU.TXT onto the diskette. Name it something like A:MASTEST.TXT or A:MASMENU.SGM (Use your initials for the extension).

Create a hard copy of the file, using PRINT.COM or redirecting your screen. You'll want to mark your planned changes as you go along. This appendix assumes you have a printout to work with.

Look at your hard copy. Your version of the Master Menu may or may not have certain features. If you are using a color monitor and installed your machine that way, your file will contain code that sets the color of the Master Menu's display and instructions for how to change the default colors. If you have a monochrome display or did not install your machine for color, these items will not appear.

Above every element of the Master Menu there are *remark lines* with explanatory text. The remark lines are indicated by two dashes in the first two columns of the line.

You can change any text that appears in quotes. You could choose to have the title read "George's Menu" or "Hi There". You can choose to alter the cursor text description. You can also choose whether to display the time in a 12 or 24 hour format by changing the 24/12 hour flag.

You can change whether the date is separated by dashes (-) or slashes(/) and how the time is separated. You can work with the country code in your CONFIG.SYS file or override it. Remember, if you have altered your CONFIG.SYS file in such a way that MS-DOS expects a different date ordering sequence (DD\MM\YY) rather than (MM\DD\YY) you must either change the prompt in Master Menu's Setting Date & Time or enter the date in the order MS-DOS expects.

In addition, if you have a color display and have installed your computer for color, you can change the display's colors. The text is self-explanatory.

After the code for date ordering (on a color unit after Color Parameters) there is explanatory material about defining menu groups.

```
--   Start defining menu groups
--
--   A menu group is:
-- "title"
-- {
--
--   stuff inside
--
-- }
--
--   The stuff inside is one or more groups of:
--   "title"          (keep this short)
--   "description"    (this appears in the right hand box)
--   **          (this means start batch file lines)
--   . . .       (one or more MSDOS command lines.
--                    you can use $"ask something" to have the user
--                    respond to a question)
--   **          (end of batch file lines)
--   You should always start off your batch file lines with a "cd" to the
--   directory where the programs you will run or files you will work with
--   are located.  To keep things clean, you should end with a "cd \main."
```

A menu group consists of:

1. A title of 20 characters (including spaces) or less enclosed in quotes. This title would appear under the main menu listing.

2. A description of the submenu that follows (i.e. the items below). This would appear in the right side bar and is enclosed in quotes.

3. A curly beginning bracket. {

4. A second title, again in quotes, which appears in the right hand menu listing and is a submenu of the first title.

5. Text, in quotes describing the menu item. This text will appear in the right side bar.

6. On a separate line two asterisks indicate that MS-DOS command will follow.

7. Each command appears on a separate line. Remember, the current working directory is C:\MAIN. Pay special attention to the command lines in Set Date and Time and the Kdesk groups. The "can't nest batch files" notation indicates that a batch file called from within another batch file will not return to the original invoking batch file. To call another batch file or to use internal MS-DOS commands you must invoke the secondary command processor (COMMAND.COM) and use the /C switch. Use a $"text in quotes" to indicate a user prompt.

8. The command lines are ended with another line of asterisks.

Items 4 through 8 repeat for each item in the menu.

9. The menu itself is ended with a curly ending bracket. }

If you use WordStar remember to use the nondocument mode. If you use another editor use the TYPE test indicated on page B-2.

You can add submenus to the main menu, individual menu items in the submenus, or simply change commands. Typical additions would be submenus to include other applications: spreadsheets, accounting packages, or games. To add an entire submenu, an easy method is to use a block copy and overwrite the text in the old menu. Be sure not to delete the ending brackets.

To change current commands, move to the line where the command appears and insert your desired command. If you are accessing a different directory, remember to change directories.

After you have completed your changes to the text file, copy your version onto C:\MAIN and overwrite the original version. (Do not overwrite the original unless you have made a backup.) While in the MAIN directory from the C: prompt enter **MASPREP** or **MASPREP -J.** (See page C-2.) This program will read MASMENU.TXT and write that information to MASMENU.DAT. During the first pass it just reads the text file. If the program encounters any errors, it will send a message to the screen. The line numbers MASPREP sends to the screen may not directly relate to line numbers in WordStar or other text editors but they will help you get close to the problem area. You might want to do a print screen of any error messages to make you editing easier. If MASPREP finds too many errors it will not write to MAS-MENU.DAT and the Master Menu will operate just as before your changes were made.

To see your new Master Menu and determine whether you have accomplished what you intended, from the system prompt of the \MAIN directory start the Master Menu with MENUST. If the results are not exactly as planned, repeat the editing process until you've achieved the desired result.

Some Limits:

Number of characters in upper bar title	30
Number of characters in the version string	22
Number of characters in a menu item name	20
Number of menu items per menu	10
Number of characters in text description	396

YOU CANNOT NEST BATCH FILES!

Appendix D
ASCII Table

Appendix D
ASCII Charts

To use these charts, first find the character you want to use on the Quick Reference Charts. The decimal value of that character can be found by adding the decimal value on the top of the chart above the character to the decimal value on the left side of the chart.

The hex value of each character is the value of the number on the top plus the number (letter) on the side.

In the Quick Reference Charts, characters that do not print on the screen are represented by their respective ASCII codes.

The 'notes' in the *Modes* column of the Character Charts are at the end of the Appendix.

The codes in the *Monochrome Attributes* column of the Character Charts are as follows:

ND	Non-Display
U	Underline
N	Normal
HI	High Intensity
RV	Reverse Video

Quick Reference Chart 1

DECIMAL VALUE	→	0	16	32	48	64	80	96	112
↓	HEXA-DECIMAL VALUE	0	1	2	3	4	5	6	7
0	0	NULL	►	SPACE	0	@	P	‘	p
1	1	☺	◄	!	1	A	Q	a	q
2	2	☻	↕	"	2	B	R	b	r
3	3	♥	‼	#	3	C	S	c	s
4	4	♦	¶	$	4	D	T	d	t
5	5	♣	§	%	5	E	U	e	u
6	6	♠	▬	&	6	F	V	f	v
7	7	•	↨	’	7	G	W	g	w
8	8	◘	↑	(	8	H	X	h	x
9	9	○	↓	)	9	I	Y	i	y
10	A	◙	→	*	:	J	Z	j	z
11	B	♂	←	+	;	K	[	k	{
12	C	♀	∟	,	<	L	\	l	¦
13	D	♪	↔	—	=	M	]	m	}
14	E	♫	▲	.	>	N	^	n	~
15	F	☼	▼	/	?	O	_	o	△

Quick Reference Chart 2

DECIMAL VALUE ➡	HEXA-DECIMAL VALUE ⬇	128	144	160	176	192	208	224	240
		8	9	A	B	C	D	E	F
0	0	Ç	É	á	▒	└	╨	∝	≡
1	1	ü	æ	í	▒	┴	╤	β	±
2	2	é	Æ	ó	▒	┬	╥	Γ	≥
3	3	â	ô	ú	│	├	╙	π	≤
4	4	ä	ö	ñ	┤	─	╘	Σ	⌠
5	5	à	ò	Ñ	╡	┼	╒	σ	⌡
6	6	å	û	ª	╢	╞	╓	µ	÷
7	7	ç	ù	º	╖	╟	╫	τ	≈
8	8	ê	ÿ	¿	╕	╚	╪	Φ	°
9	9	ë	Ö	⌐	╣	╔	┘	Θ	∙
10	A	è	Ü	¬	║	╩	┌	Ω	·
11	B	ï	¢	½	╗	╦	■	δ	√
12	C	î	£	¼	╝	╠	▄	∞	n
13	D	ì	¥	¡	╜	═	▌	φ	2
14	E	Ä	₧	«	╛	╬	▐	∈	■
15	F	Å	ƒ	»	┐	╧	▀	∩	

Hex Val	Dec Val	Key-Strokes	Modes	Color Back ground	Color Fore-ground	Mono-chrome Attributes
00	0	Ctrl-2		Black	Black	ND
01	1	Ctrl-A		Black	Blue	U
02	2	Ctrl-B		Black	Green	N
03	3	Ctrl-C		Black	Cyan	N
04	4	Ctrl-D		Black	Red	N
05	5	Ctrl-E		Black	Magenta	N
06	6	Ctrl-F		Black	Brown	N
07	7	Ctrl-G		Black	Gray	N
08	8	Ctrl-H Backspace Ctrl-Bksp		Black	Dark Gray	ND
09	9	Ctrl-I,TAB		Black	Lt. Blue	HI,U
0A	10	Ctrl-J Ctrl-Enter		Black	Lt. Green	HI
0B	11	Ctrl-K		Black	Lt. Cyan	HI
0C	12	Ctrl-L		Black	Lt. Red	HI
0D	13	Ctrl-M Enter Ctrl-Enter	Note 1	Black	Lt. Magenta	HI
0E	14	Ctrl-N		Black	Yellow	HI
0F	15	Ctrl-O		Black	White	HI
10	16	Ctrl-P		Blue	Black	N
11	17	Ctrl-Q		Blue	Blue	U
12	18	Ctrl-R		Blue	Green	N
13	19	Ctrl-S		Blue	Cyan	N
14	20	Ctrl-T		Blue	Red	N
15	21	Ctrl-U		Blue	Magenta	N
16	22	Ctrl-V		Blue	Brown	N
17	23	Ctrl-W		Blue	Gray	N
18	24	Ctrl-X		Blue	Dark Gray	HI
19	25	Ctrl-Y		Blue	Lt. Blue	HI,U
1A	26	Ctrl-Z		Blue	Lt. Green	HI
1B	27	Ctrl-[ESC Shift-ESC Ctrl-ESC		Blue	Lt. Cyan	HI
1C	28	Ctrl-\		Blue	Lt. Red	HI
1D	29	Ctrl-]		Blue	Lt. Magenta	HI
1E	30	Ctrl-6		Blue	Yellow	HI
1F	31	Ctrl--(dash)		Blue	White	HI
20	32	Space Bar Shift-Space Alt-Space Ctrl-Space		Green	Black	N
21	33	!		Green	Blue	N

Hex Val	Dec Val	Key-Strokes	Modes	Color Back ground	Color Fore-ground	Mono-chrome Attributes
22	34	"	Shift	Green	Green	U
23	35	#	Shift	Green	Cyan	N
24	35	$	Shift	Green	Red	N
25	37	%	Shift	Green	Magenta	N
26	38	&	Shift	Green	Brown	N
27	39	'		Green	Gray	N
28	40	(	Shift	Green	Dark Gray	HI
29	41	)	Shift	Green	Lt. Blue	HI,U
2A	42	*	Note 2	Green	Lt. Green	HI
2B	43	+	Note 3	Green	Lt. Cyan	HI
2C	44	,		Green	Lt. Red	HI
2D	45	-	Note 4	Green	Lt. Magenta	HI
2E	46	.	Note 5	Green	Yellow	HI
2F	47	/	Note 6	Green	White	HI
30	48	0	Note 7	Cyan	Black	N
31	49	1	Note 7	Cyan	Blue	U
32	50	2	Note 7	Cyan	Green	N
33	51	3	Note 7	Cyan	Cyan	N
34	52	4	Note 7	Cyan	Red	N
35	53	5	Note 7	Cyan	Magenta	N
36	54	6	Note 7	Cyan	Brown	N
37	55	7	Note 7	Cyan	Gray	N
38	56	8	Note 7	Cyan	Dark Gray	HI
39	57	9	Note 7	Cyan	Lt. Blue	HI,U
3A	58	:	Shift	Cyan	Lt. Green	HI
3B	59	;		Cyan	Lt. Cyan	HI
3C	60	<	Shift	Cyan	Lt. Red	HI
3D	61	=		Cyan	Lt. Magenta	HI
3E	62	>	Shift	Cyan	Yellow	HI
3F	63	?	Shift	Cyan	White	HI
40	64	@	Shift	Red	Black	N
41	65	A	Note 8	Red	Blue	U
42	66	B	Note 8	Red	Green	N
43	67	C	Note 8	Red	Cyan	N
44	68	D	Note 8	Red	Red	N
45	69	E	Note 8	Red	Magenta	N
46	70	F	Note 8	Red	Brown	N
47	71	G	Note 8	Red	Gray	N
48	72	H	Note 8	Red	Dark Gray	U
49	73	I	Note 8	Red	Lt. Blue	HI,U
4A	74	J	Note 8	Red	Lt. Green	HI
4B	75	K	Note 8	Red	Lt. Cyan	HI

Hex Val	Dec Val	Key-Strokes	Modes	Color Back ground	Color Fore-ground	Mono-chrome Attributes
4C	76	L	Note 8	Red	Lt. Red	HI
4D	77	M	Note 8	Red	Lt. Magenta	HI
4E	78	N	Note 8	Red	Yellow	HI
4F	79	O	Note 8	Red	White	HI
50	80	P	Note 8	Magenta	Black	N
51	81	Q	Note 8	Magenta	Blue	U
52	82	R	Note 8	Magenta	Green	N
53	83	S	Note 8	Magenta	Cyan	N
54	84	T	Note 8	Magenta	Red	N
55	85	U	Note 8	Magenta	Magenta	N
56	86	V	Note 8	Magenta	Brown	N
57	87	W	Note 8	Magenta	Gray	N
58	88	X	Note 8	Magenta	Dark Gray	HI
59	89	Y	Note 8	Magenta	Lt. Blue	HI,U
5A	90	Z	Note 8	Magenta	Lt. Green	HI
5B	91	[		Magenta	Lt. Cyan	HI
5C	92	\		Magenta	Lt. Red	HI
5D	93	]		Magenta	Lt. Magenta	HI
5E	94	^	Shift	Magenta	Yellow	HI
5F	95	_	Shift	Magenta	White	HI
60	96	`		Brown	Black	N
61	97	a	Note 9	Brown	Blue	U
62	98	b	Note 9	Brown	Green	N
63	99	c	Note 9	Brown	Cyan	N
64	100	d	Note 9	Brown	Red	N
65	101	e	Note 9	Brown	Magenta	N
66	102	f	Note 9	Brown	Brown	N
67	103	g	Note 9	Brown	Gray	N
68	104	h	Note 9	Brown	Dark Gray	HI
69	105	i	Note 9	Brown	Lt. Blue	HI,U
6A	106	j	Note 9	Brown	Lt. Green	HI
6B	107	k	Note 9	Brown	Lt. Cyan	HI
6C	108	l	Note 9	Brown	Lt. Red	HI
6D	109	m	Note 9	Brown	Lt. Magenta	HI
6E	110	n	Note 9	Brown	Yellow	HI
6F	111	o	Note 9	Brown	White	HI
70	112	p	Note 9	Gray	Black	N
71	113	q	Note 9	Gray	Blue	U
72	114	r	Note 9	Gray	Green	N
73	115	s	Note 9	Gray	Cyan	N
74	116	t	Note 9	Gray	Red	N
75	117	u	Note 9	Gray	Magenta	N

Hex Val	Dec Val	Key-Strokes	Modes	Color Back ground	Color Fore-ground	Mono-chrome Attributes
76	118	v	Note 9	Gray	Brown	N
77	119	w	Note 9	Gray	Gray	N
78	120	x	Note 9	Gray	Dark Gray	RV
79	121	y	Note 9	Gray	Lt. Blue	HI,U
7A	122	z	Note 9	Gray	Lt. Green	HI
7B	123	{	Shift	Gray	Lt. Cyan	HI
7C	124	|	Shift	Gray	Lt. Red	HI
7D	125	}	Shift	Gray	Lt. Magenta	HI
7E	126	~	Shift	Gray	Yellow	HI
7F	127	Del Ctrl-Bksp	Note 10	Gray	White	HI

80 to FF Hex are flashing in both color and monochrome

80	128	Alt-128	Note 11	Black	Black	ND
81	129	Alt-129	Note 11	Black	Blue	U
82	130	Alt-130	Note 11	Black	Green	N
83	131	Alt-131	Note 11	Black	Cyan	N
84	132	Alt-132	Note 11	Black	Red	N
85	133	Alt-133	Note 11	Black	Magenta	N
86	134	Alt-134	Note 11	Black	Brown	N
87	135	Alt-135	Note 11	Black	Gray	N
88	136	Alt-136	Note 11	Black	Dark Gray	HI
89	137	Alt-137	Note 11	Black	Lt. Blue	HI,U
8A	137	Alt-138	Note 11	Black	Lt. Green	HI
8B	139	Alt-139	Note 11	Black	Lt. Cyan	HI
8C	140	Alt-140	Note 11	Black	Lt. Red	HI
8D	141	Alt-141	Note 11	Black	Lt. Magenta	HI
8E	142	Alt-142	Note 11	Black	Yellow	HI
8F	143	Alt-143	Note 11	Black	White	HI
90	144	Alt-144	Note 11	Blue	Black	N
91	145	Alt-145	Note 11	Blue	Blue	U
92	146	Alt-146	Note 11	Blue	Green	N
93	147	Alt-147	Note 11	Blue	Cyan	N
94	148	Alt-148	Note 11	Blue	Red	N
95	149	Alt-149	Note 11	Blue	Magenta	N
96	150	Alt-150	Note 11	Blue	Brown	N
97	151	Alt-151	Note 11	Blue	Gray	N
98	152	Alt-152	Note 11	Blue	Dark Gray	HI

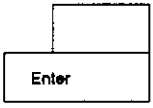
Hex Val	Dec Val	Key-Strokes	Modes	Color Back ground	Color Fore-ground	Mono-chrome Attributes
99	153	Alt-153	Note 10	Blue	Lt. Blue	HI,U
9A	154	Alt-154	Note 10	Blue	Lt. Green	HI
9B	155	Alt-155	Note 10	Blue	Lt. Cyan	HI
9C	156	Alt-156	Note 10	Blue	Lt Red	HI
9D	157	Alt-157	Note 10	Blue	Lt. Magenta	HI
9E	158	Alt-158	Note 10	Blue	Yellow	HI
9F	159	Alt-159	Note 10	Blue	White	HI
A0	160	Alt-160	Note 10	Green	Black	N
A1	161	Alt-161	Note 10	Green	Blue	U
A2	162	Alt-162	Note 10	Green	Green	N
A3	163	Alt-163	Note 10	Green	Cyan	N
A4	164	Alt-164	Note 10	Green	Red	N
A5	165	Alt-165	Note 10	Green	Magenta	N
A6	166	Alt-166	Note 10	Green	Brown	N
A7	167	Alt-167	Note 10	Green	Gray	N
A8	168	Alt-168	Note 10	Green	Dark Gray	HI
A9	169	Alt-169	Note 10	Green	Lt. Blue	HI,U
AA	170	Alt-170	Note 10	Green	Lt. Green	HI
AB	171	Alt-171	Note 10	Green	Lt. Cyan	HI
AC	172	Alt-172	Note 10	Green	Lt. Red	HI
AD	173	Alt-173	Note 10	Green	Lt. Magenta	HI
AE	174	Alt-174	Note 10	Green	Yellow	HI
AF	175	Alt-175	Note 10	Green	White	HI
B0	176	Alt-176	Note 10	Cyan	Black	N
B1	177	Alt-177	Note 10	Cyan	Blue	U
B2	178	Alt-178	Note 10	Cyan	Green	N
B3	179	Alt-179	Note 10	Cyan	Cyan	N
B4	180	Alt-180	Note 10	Cyan	Red	N
B5	181	Alt-181	Note 10	Cyan	Magenta	N
B6	182	Alt-182	Note 10	Cyan	Brown	N
B7	183	Alt-183	Note 10	Cyan	Gray	N
B8	184	Alt-184	Note 10	Cyan	Dark Gray	HI
B9	185	Alt-185	Note 10	Cyan	Lt. Blue	HI,U
BA	186	Alt-186	Note 10	Cyan	Lt. Green	HI
BB	187	Alt-187	Note 10	Cyan	Lt. Cyan	HI
BC	188	Alt-188	Note 10	Cyan	Lt. Red	HI
BD	189	Alt-189	Note 10	Cyan	Lt. Magenta	HI
BE	190	Alt-190	Note 10	Cyan	Yellow	HI
BF	191	Alt-191	Note 10	Cyan	White	HI
C0	192	Alt-192	Note 10	Red	Black	N
C1	193	Alt-193	Note 10	Red	Blue	U

Hex Val	Dec Val	Key-Strokes	Modes	Color Back ground	Color Fore-ground	Mono-chrome Attributes
C2	194	Alt-194	Note 10	Red	Green	N
C3	195	Alt-195	Note 10	Red	Cyan	N
C4	196	Alt-196	Note 10	Red	Red	N
C5	197	Alt-197	Note 10	Red	Magenta	N
C6	198	Alt-198	Note 10	Red	Brown	N
C7	199	Alt-199	Note 10	Red	Gray	N
C8	200	Alt-200	Note 10	Red	Dark Gray	HI
C9	201	Alt-201	Note 10	Red	Lt. Blue	HI,U
CA	202	Alt-202	Note 10	Red	Lt. Green	HI
CB	203	Alt-203	Note 10	Red	Lt. Cyan	HI
CC	204	Alt-204	Note 10	Red	Lt. Red	HI
CD	205	Alt-205	Note 10	Red	Lt. Magenta	HI
CE	206	Alt-206	Note 10	Red	Yellow	HI
CF	207	Alt-207	Note 10	Red	White	HI
D0	208	Alt-208	Note 10	Magenta	Black	N
D1	209	Alt-209	Note 10	Magenta	Blue	U
D2	200	Alt-200	Note 10	Magenta	Green	N
D3	211	Alt-211	Note 10	Magenta	Cyan	N
D4	212	Alt-212	Note 10	Magenta	Red	N
D5	213	Alt-213	Note 10	Magenta	Magenta	N
D6	214	Alt-214	Note 10	Magenta	Brown	N
D7	215	Alt-215	Note 10	Magenta	Gray	N
D8	216	Alt-216	Note 10	Magenta	Dark Gray	HI
D9	217	Alt-217	Note 10	Magenta	Lt. Blue	HI,U
DA	218	Alt-218	Note 10	Magenta	Lt. Green	HI
DB	219	Alt-219	Note 10	Magenta	Lt. Cyan	HI
DC	220	Alt-220	Note 10	Magenta	Lt. Red	HI
DD	221	Alt-221	Note 10	Magenta	Lt. Magenta	HI
DE	222	Alt-222	Note 10	Magenta	Yellow	HI
DF	223	Alt-223	Note 10	Magenta	White	HI
E0	224	Alt-224	Note 10	Brown	Black	N
E1	225	Alt-225	Note 10	Brown	Blue	U
E2	226	Alt-226	Note 10	Brown	Cyan	N
E3	227	Alt-227	Note 10	Brown	Red	N
E4	228	Alt-228	Note 10	Brown	Magenta	N
E5	229	Alt-229	Note 10	Brown	Brown	N
E6	230	Alt-230	Note 10	Brown	Gray	N
E7	231	Alt-231	Note 10	Brown	Dark Gray	HI
E8	232	Alt-232	Note 10	Brown	Lt. Blue	HI,U
E9	233	Alt-233	Note 10	Brown	Lt. Green	HI

Hex Val	Dec Val	Key-Strokes	Modes	Color Back ground	Color Fore-ground	Mono-chrome Attributes
EA	234	Alt-234	Note 10	Brown	Lt. Cyan	HI
EB	235	Alt-235	Note 10	Brown	Lt. Red	HI
EC	236	Alt-236	Note 10	Brown	Lt. Magenta	HI
ED	237	Alt-237	Note 10	Brown	Magenta	HI
EE	238	Alt-238	Note 10	Brown	Yellow	HI
EF	239	Alt-239	Note 10	Brown	White	HI
F0	240	Alt-240	Note 10	Gray	Black	N
F1	241	Alt-241	Note 10	Gray	Blue	U
F2	242	Alt-242	Note 10	Gray	Green	N
F3	243	Alt-243	Note 10	Gray	Cyan	N
F4	244	Alt-244	Note 10	Gray	Red	N
F5	245	Alt-245	Note 10	Gray	Magenta	N
F6	246	Alt-246	Note 10	Gray	Brown	N
F7	247	Alt-247	Note 10	Gray	Gray	N
F8	248	Alt-248	Note 10	Gray	Dark Gray	HI
F9	249	Alt-249	Note 10	Gray	Lt. Blue	HI,U
FA	250	Alt-250	Note 10	Gray	Lt. Green	HI
FB	251	Alt-251	Note 10	Gray	Lt. Cyan	HI
FC	252	Alt-252	Note 10	Gray	Lt. Red	HI
FD	253	Alt-253	Note 10	Gray	Lt. Magenta	HI
FE	254	Alt-254	Note 10	Gray	Yellow	HI
FF	255	Alt-255	Note 10	Gray	White	HI

Notes from the Modes Column

Note 1: Enter can be typed using two methods:

1. Press the 

key.

2. Press the 

key on the numeric keypad.

Note 2: The asterisk (*) can be typed using two methods:

1. Press the 

key in Shift mode.

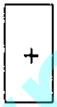
2. Press the 

key on the numeric keypad.

Note 3: The plus sign (+) can be typed using two methods:

1. Press the 

key in Shift mode.

2. Press the 

key on the numeric keypad.

Note 4: The hyphen or minus sign (-) can be typed using two methods:

1. Press the 

key.

2. Press the 

key on the numeric keypad.

Note 5: The period (.) can be typed using three methods:

1. Press the  key.

2. With the Num Lock on, press the  key on the number pad.

3. With the Num Lock off, press the  key in Shift mode.

Note 6: The slash or division symbol (/) can be typed using two methods:

1. Press the  key.

2. Press the  key on the number pad.

Note 7: Numeric characters (0-9) can be typed using three methods:

1. Press the numeric keys on the top row of typewriter portion of the keyboard.
2. With Num Lock on, press the numeric keys on the numeric keypad on the right side of the keyboard.
3. With Num Lock off, press the numeric keys on the numeric keypad in Shift mode.

Note 8: Upper case alphabetic characters (A-Z) can be typed using two methods:

1. With Caps Lock on, press the appropriate alphabetic key.
2. With Caps Lock off, press the appropriate alphabetic key in Shift mode.

Note 9: Lower case alphabetic characters (**a-z**) can be typed using two methods:

1. With Caps Lock on, press the appropriate alphabetic key in Shift mode.
2. With Caps Lock off, press the appropriate alphabetic key.

Note 10: Delete can be typed using three methods:

1. Press the 

key in the middle section of the keyboard.

2. With Num Lock on, press the 

key on the numeric keypad.

3. With Num Lock off, press the 

key on the numeric keypad in Shift mode.

Note 11: The 3 digits after the Alt key must be typed from the numeric keypad. Character codes 128 through 255 may be entered in this fashion. This method will not work if the display is installed as an ANSI terminal.

Glossary

Glossary

Abort - possible response to the "Abort, Retry, Ignore" error message displayed following a device error. Press letter A to choose this option, which terminates the command and returns to the original state of operation.

Memory address - number used by the computer to keep track of a memory location.

Applications program - program designed to meet specific user needs, such as a word processor or spreadsheet. Also referred to as *software*.

Archive File - file that has not been copied by a backup program since it was last changed. Any file can be an archive file, but they are usually data files that are changed every day.

ASCII - acronym for American Standard Code for Information Interchange. The standard 7-bit code used for information exchange among between computers. The ASCII set includes control characters and graphics characters as well as alphanumeric characters. The term "ASCII file" refers to a text or data file with strictly alphanumeric characters, without the special control characters usually inserted by applications programs.

Asynchronous Communication - method of transmitting data from one device to another in which each transmitted character is preceded by a START bit and followed by a STOP bit.

Backup Diskette - copy of a diskette made to safeguard against data errors or physical damage to the diskette. Use the DISKCOPY command to copy any diskette (such as the Kaypro Master Diskettes) which contain important files or programs. Store the originals in a safe place and use the backups for your everyday working disks.

BASIC - acronym for *Beginner's All-purpose Symbolic Instruction Code*. It is an easy-to-learn computer language widely used by people new to computers.

Batch File - text file consisting of a series of commands that are automatically executed when the file is run. Batch files always have a .BAT extension.

Baud - unit of measurement of data transmission speed, approximately equivalent to bits per second. Typical baud rates are 110, 300, 1200, 2400, 4800, and 9600.

Bit - the smallest unit of information recognizable by a computer. All information processed by a computer is written in *bit* form.

Boot - starting or restarting the computer. A *cold* boot occurs when the computer is first turned on. A *warm* boot can be executed from the keyboard once the computer is on by holding down the *Ctrl* key and the *Alt* key, and pressing the *Del* key.

Buffer - area of memory set aside for storing data from input/output devices such as keyboards, printers and disk drives

Bug - problem or undesirable side-effect in a computer program or system.

Byte - unit of measure for storage space used by computers. A byte consists of eight bits (binary digits). In a binary numbering system, only two numbers are used: 0 and 1. Each of these numbers is called a binary digit, or bit. When you type a DIR command, the size of the files is shown in bytes. (See also Kilobyte.)

Carriage return - Word processing term derived from typewriter terminology. Pressing the *Enter* key creates a carriage return in word processing.

Character - single letter of the alphabet, numeral, punctuation mark, or other symbol which a computer can read, write and store.

Chip - common term for an integrated circuit.

Circuit board - (also called *Circuit Card* or *Expansion Card*) a plastic board carrying printed circuits and electronic components which is inserted into one of the computer's expansion slots. Many devices can be added to the computer through the use of circuit boards, including modems, expanded memory, video adapters, and even hard disks.

CLS - type this command from the DOS prompt and press *Enter* to clear the screen.

Command - sequence of characters entered by the user which tells the computer to perform a specific task. An example is the DIR command, which tells the computer to display a directory listing.

COMMAND.COM - file that is part of the MS-DOS operating system. The COMMAND.COM file must be present on the disk which is used to boot up the computer.

Console - term used for devices used for communicating between you and the computer. This term is usually used in reference to the keyboard and video display.

COPY - MS-DOS command used to copy files one at a time from one disk to another.

Ctrl Key - The *Ctrl* key, usually located on the left side of the computer keyboard, is used in combination with other keys to perform special functions. Common control key sequences are *Ctrl-C* (terminates a command) and *Ctrl-S* (stops screen display scrolling).

CPU - acronym for Central Processing Unit (the 80286 chip on the K286i).

Cursor - blinking line or box on the video monitor which indicates the next location for data entry.

Default - action or condition which occurs if no instructions are given to the contrary.

Default Disk Drive - the currently logged drive. The default drive letter is the one that is currently displayed by the DOS prompt. For example, if the prompt is A>, then the default drive is drive A.

Device - something which sends or receives information. Devices can be *physical* or *logical*. Examples of devices are: disk drive (physical), printer (physical), display screen (physical), RAM disk (logical), mouse (physical), and keyboard (physical).

DIP Switch - small switches located inside the computer which are used to set various hardware parameters. Example: DIP switches are used to set the video display adapter board for different types of monitors.

DIR - command which tells MS-DOS to display the file directory. When you type **DIR**, MS-DOS will display the contents of the disk on the default drive. The command **DIR B:** displays the contents of the disk in drive B.

Directory - a table of contents for a disk or hard disk subdirectory. The directory lists the name, size, and date/time the file was created or last modified.

Disk - the terms *diskette*, *hard disk*, *hard drive*, and *disk* are used throughout this manual. Where *disk* is used, it may apply to both floppy diskettes and hard drives. (See also *diskette*.)

Disk Drive - device used to store information. A disk drive can be either a diskette (floppy) drive or a hard (fixed) disk drive. A hard disk holds much more information than a floppy disk, and the information on it can be accessed much faster. Floppy disk drives are usually designated drive A and B. Hard disks are usually drive C and D. With two floppy drives, the top drive is drive A. If you have only one floppy disk drive, it is still drive A.

DOS - Disk Operating System (DOS) is a group of programs that act as a translator between you and the computer. KAYPRO computers use the MS-DOS operating system. This system may either reside on a floppy diskette or on a hard disk, and must be present when the computer is booted up.

DOS Prompt - (also called System Prompt) characters displayed by MS-DOS on the screen to indicate that the operating system is ready to accept commands. The standard DOS prompt when the logged drive is a diskette drive is **A>** or **B>**, while the prompt is **C>** when the hard drive is the logged drive.

Drive Letter - letter followed by a colon which designates a disk drive. For example, the filename A:MYFILE.TXT contains a drive letter (A:) that tells MS-DOS to look on drive A for the file named MYFILE.TXT.

DISKCOPY - MS-DOS program used to create a mirror image of a diskette. This command requires that the MS-DOS file DISKCOPY.EXE be present when the command is executed.

Diskette - flexible Mylar disk coated with magnetic oxides and used for storage of data. There is usually a *write-protect* notch on the side of the diskette which (when covered with a strip of tape called a *write-protect tab*) prevents modification of the files on that diskette. Two types of 5 1/4" double sided diskettes are used on the K286i: *1.2MB high capacity* diskettes, and *360K* diskettes.

Enter - key located on the right side of your keyboard which sends your commands to the system and is used as a carriage return when word processing.

Error Messages - displayed on the screen when MS- DOS detects a problem. Refer to your *MS-DOS User's Guide*, Appendix E, for the appropriate response to each error message.

File - collection of related information that is treated as a unit by the computer. Files can be *data* files, *text* files, or *program* files (such as a word processing or spreadsheet program.)

Filename - a set of characters which identifies a file. Filenames can be up to 8 characters long, followed by a period (.) and an optional three-letter extension. An example of a valid filename is WHATSUP.DOC. Certain filenames are reserved by MS-DOS and should not be used to name your files. These filenames are: *aux, lst, nul, con*, and *prn*.

Filename Extension - optional file identifier which has 1 to 3 characters and is separated from the filename by a period. (Example MYFILE.TXT. *TXT* is the extension). Filename extensions are often used to identify groups of files. Application programs may also supply their own extensions to files they create. (Example: All GWBASIC files use a filename extension of .BAS.)

Filespec - Combination of drive letter designation, filename, and file extension. A:MYFILE.TXT is an example of a filespec.

Floppy Diskette - See diskette

FORMAT - every new diskette must be formatted before it can be used to store data. The FORMAT program prepares each diskette to receive data and checks for defective tracks on the disk.

Function Keys - specific keys which tell the computer to perform a particular operation. These keys are labeled F1 through F10 and are located along the top of the keyboard.

Hard disk - rigid, non-removable disk (sometimes called a *hard drive*) used to store information. While floppy diskettes can store only 360K or 1.2MB, the hard disk supplied with the K286i Model C can store 40MB.

Hardware - term used to describe the physical parts of the computer and peripheral equipment such as printers, cables, and monitors.

I/O Card - circuit board which contains the serial and parallel ports which you see on the rear panel. *I/O* is an abbreviation for Input/Output.

Ignore - a response to the error message "Abort, Retry, Ignore". It tells the computer to ignore the error and continue processing. **Note:** this response can damage data on the disk.

Input - information sent to the computer. This information can come from the keyboard (when you type commands), programs, other computers, and peripheral devices like joysticks or light pens.

Jumper - device used on circuit boards to change settings for differing equipment configuration. Example: a two-position jumper is used to determine parallel port settings on the I/O card.

Kilobyte - unit of data storage often abbreviated K or KB. Equal to 1024 bytes.

Logical hard drive - hard disk as it is recognized by the operating system. A computer may have several logical drives which are created from a single *physical* (mechanical) hard disk. See Physical Hard Drive.

Megabyte - unit of data storage often abbreviated MB. Equal to 1,048,576 bytes.

Load - process of reading data from a storage device (diskette or hard disk) and storing it in random access memory.

Memory - used for temporary data storage. Programs are loaded from disk into memory (Random Access Memory or RAM). Memory is measured in bytes. The K286i is equipped with 640KB of random access memory.

Modem - device that enables a computer to transmit data through the telephone lines.

Monitor sometimes called CRT, Video Display Terminal (VDT), or just "the screen." It attaches to your computer and is used (along with the printer) as an output device.

MS-DOS - acronym for *Microsoft Disk Operating System*. This operating system is used for all computers which are considered "IBM Compatible."

MS-DOS diskette - the MS-DOS system files are distributed on one or more floppy diskettes along with the user's manuals. You should always make a backup copy of the master diskette or diskettes before you start using MS-DOS on a routine basis. Also called *system diskette*.

Operating system - control system which coordinates all the computer's operations. The operating system must be present in computer memory before an application program can be used.

Output - information which is transferred from the computer to a device such as a printer, disk drive, or monitor.

Parallel - type of output in which eight bits at a time are sent to the printer.

Parity - method of error checking used in data transmission.

Partitioning - method of dividing hard disk into two or more logical drives. A hard disk greater than 32 MB must be partitioned before it can be used by the MS-DOS operating system.

Peripheral - input/output or other device that is not directly controlled by the computer. Examples of peripherals are: printer, mouse, modem, light pen, joystick, digitizer pad, plotter, and scanner.

Physical hard drive - refers to a mechanical disk storage device (as opposed to a *logical* hard drive, which refers to a hard drive as it is recognized by the computer's operating system). A computer may have several logical hard drives created from one physical hard drive.

Pixel - measure of screen display. The more pixels per square inch of screen, the greater the resolution of the display.

Program - term used to describe a file or group of files which is designed to direct the computer to perform a specified task. Programs can be stored on disk and range from small one-file programs like DISKCOPY to multiple-file applications like WordStar and Lotus 1-2-3. Program files can usually be identified by the file extensions .COM (for *command*) or .EXE (for *executable*).

Prompt - screen display which requests input from the user. The standard MS-DOS prompt consists of the default drive letter (A, B, or C) followed by a greater-than sign (>).

RAM (Random-Access Memory) - used by the computer to temporarily store data from files or other sources. RAM is not a permanent storage location. All data which is stored in RAM will be erased when the computer is turned off or rebooted.

ROM (Read-Only Memory) - used by the computer to store information which cannot be changed (it can only be *read*). Data stored in ROM is loaded at the factory and is will not be erased when the computer is rebooted or switched off.

Real time clock - internal battery-powered clock which stores the system time and date and "stamps" files with the time and date when each file was created or modified.

Retry - possible response to the "Abort, Retry, Ignore?" message displayed following a device error. This response, invoked by typing the letter **R**, will repeat the original command.

Serial - type of output in which one bit at a time is sent to the printer.

Software - programs used to direct the computer to perform specific functions. Used to denote programs as opposed to *hardware*, which is used to describe the physical parts of the computer system.

Utility - program designed to perform very specific tasks, usually working at the operating system level. For example, FORMAT.COM is a utility program (details in the *MS-DOS User's Guide*) that allows the formatting of disks.

Word Processor - type of software used to create, format, and print written documents.

Working Directory - The working directory is the directory or subdirectory where you are currently working. Also called the *Current Directory*.

Write-protect Notch - Small notch on the side of a diskette which can be covered (with a *write-protect tab*) to prevent changes or deletions of the data on the diskette.

Index

Index

A

B

C

D

E

F

H

I

J

K

L

M

N

O

P

R

S

T

U

V

W