WANG

2200

Model 2275 Disk Drive
User Manual

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PREFACE

This manual describes the operation of the Wang Model 2275 Disk Drive, a peripheral designed to provide reliable, inexpensive storage for Wang 2200MVP, LVP, and VP systems.

Information for using the disk drive is organized into three chapters. Chapter 1 contains general information; Chapter 2 explains how to use the diskette drive; and Chapter 3 discusses the Winchester fixed disk drive. Appendices cover device addresses, error messages, and physical specifications for the disk drive.

For additional information on 2200 system operations, refer to the following Wang reference manuals:

BASIC-2 Language Reference Manual	700-4080
BASIC-2 Disk Reference Manual	700-4081
2200LVP Introductory Manual	700-6164
2200MVP Introductory Manual	700-4693
2200VP Introductory Manual	700-4282
Programming in BASIC	700-3231
2229 Cartridge Tape Drive	
User Manual	700-7716

CONTENTS

FIGURES

CHAPTER 1
MODEL 2275 GENERAL INFORMATION

1.1 INTRODUCTION

The Model 2275 Disk Drive provides on-line disk storage to 2200MVP, LVP, and VP systems. The 2275 Disk Drive is available in two models: the Model 2275-10 and the Model 2275-20. The 2275-10 provides a 5.25-inch diskette drive that can store 320K bytes of data and a 5.25-inch Winchester fixed disk drive that can store 10M bytes of data. The 2275-20 consists of two 5.25-inch Winchester fixed disk drives, each of which can store 10M bytes of data. Up to three 2275 disk units can be attached to a 2200MVP, LVP, or VP system.

1.2 INSTALLATION

The Model 2275 Disk Drive must be unpacked, inspected, and installed by a Wang service representative. Upon delivery of the unit, call the Wang service office and request that this service be performed. Failure to follow this procedure voids the warranty.

The Model 2275 Disk Drive is connected to the 2200 system with the enclosed cable. The cable connects the 2200 disk controller, which is installed in the 2200 CPU, and the connector on the rear panel of the 2275. The 2275 is connected to one of the following disk controllers, depending upon the 2200 configuration.

- 22C03   Disk Controller
- 22C11   Dual Controller
- 22C32   Triple Controller

1.3 CONTROLS AND INDICATORS

Two LED lamps are located on the front panel of the 2275 unit. A drive is in operation, reading data from or writing data to the disk, when its corresponding lamp is lit. Do not power off the 2275 while either drive is in operation.

The Power ON/OFF switch is located on the rear panel of the 2275 unit. Upon power on, the Winchester lamp is lit, indicating that the unit is being initialized; the lamp remains lit until the 2275 is ready for use. Thereafter, you can use the drive as soon as the 2200 system is ready.

1.4 ORDERING DISKETTES

Diskettes for the 2275-10 are available from Wang Supplies Division (Part Number 177-0080-1). To place an order, call: 1-800-225-0234. From Massachusetts, Hawaii, and Alaska, call: (617) 256-1400.

1.5 MAINTENANCE

Wang recommends that you perform no maintenance on the disk drive. For periodic cleaning and service, you should contact a Wang service representative.

CHAPTER 2
USING DISKETTES

2.1 5.25-INCH DOUBLE-SIDED DOUBLE-DENSITY DISKETTES

The Model 2275 Disk Drive uses 5.25-inch double-sided double-density (DSDD) diskettes. Double-sided diskettes require two sets of read/write heads to retrieve and record information on both sides of the magnetic disk. Double-density provides the diskette with twice as much storage capacity as single-density diskettes.

A write-protect slot is provided on each diskette to prohibit writing over information already stored. Valuable programs or data can be protected from inadvertent loss by using the write-protect tabs. If the slot on a 5.25-inch diskette is covered, information can be read from the diskette but no information can be written onto the diskette. To write-protect the diskette, place one of the adhesive tabs supplied with the diskettes over the write-protect slot.

All blank diskettes are manufactured without the tabs covering the write-protect slot. Diskettes can accept data only when the write-protect slot is uncovered.

```
┌─────────────────────── NOTE ───────────────────────┐
│                                                     │
│  The procedure for write protecting 2275 diskettes is exactly │
│  opposite that used for 8-inch diskettes on 2200 systems.  An │
│  open slot on an 8-inch diskette protects it from being │
│  overwritten; writing is allowed when the slot is covered. │
│                                                     │
└─────────────────────────────────────────────────────┘
```

2.2 TAKING CARE OF YOUR DISKETTES

Diskettes are a reliable and safe media for storing electronic information. However, if diskettes are not handled properly, information can be partially or totally lost. A full diskette stores the equivalent of 128 typewritten pages and damaging a diskette can be a serious loss. Therefore, you should maintain backup copies of all important diskettes. Use the 2200 System Utilities to record backup copies.

Follow the steps below to properly care for your diskettes:

1. Use a felt tip pen when you label a new diskette. Never use ball point pens or pencils, as they can scratch the diskette's surfaces.

2. Do not touch the exposed surfaces of the magnetic diskette.

3. Keep your diskettes free from dust, dirt, and cigarette ashes.

4. Keep your diskettes away from any type of magnetic material. Such exposure can erase or distort the information on a diskette.

5. Do not fold, bend, or cause the diskettes to warp.

6. Maintain an acceptable environment with temperatures between 50°F and 125°F (10°C and 52°C) and a relative humidity between 8% and 80%. Conditions that exceed any of these limits can physically change the recording surfaces so that information on them becomes irretrievable.

7. Do not open the door of a diskette drive if the red indicator light, located on the front of the drive, is on. You can scratch the surface of a diskette while it is being read from or written to by opening the door when the indicator light is on.

2.3 INSERTING A DISKETTE

Use the following steps to load your diskette into the drive:

1. Put one finger under the drive door and pull forward as shown in Figure 2-1. The door snaps open.
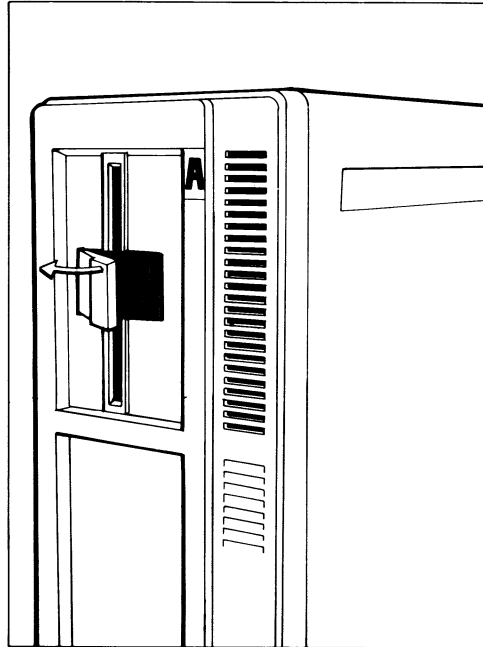
Figure 2-1. Opening the Diskette Drive Door

2. Grasp the diskette as indicated in Figure 2-2 and slip it into the slot in the drive. Be sure the edge of the diskette closest to the recording slot goes into the drive first. Use the Insert and Up arrows on the orientation label to confirm that the position of the diskette is correct as you insert it in the drive. Slip the diskette completely into the drive.
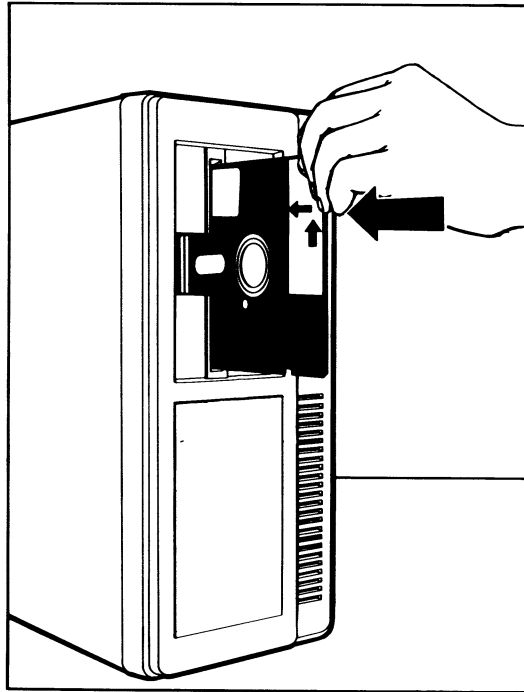
Figure 2-2. Inserting a Diskette

3. Close the diskette drive door. The diskette is now ready to use.

2.4 DISKETTE FORMATS

Before a diskette can store information, it must be formatted. Formatting allocates fixed length storage areas, called sectors, on the diskette. The standard format for 2200 disk operations uses 256-byte sectors. This format should be used for normal 2200 operations.

The 2275 also supports the Wang PC (Professional Computer) 512-byte sector format so that data can be easily interchanged between the Wang 2200 and Wang PC systems. The 512-byte sectoring is transparent to the 2200 Operating System. (The 2275 maps two 256-byte logical sectors into one 512-byte physical sector.) BASIC-2 accesses diskettes with the PC format as if the diskette were formatted with 256-byte sectors. All BASIC-2 disk operations can be performed. Although the 512-byte format provides 360K bytes of diskette capacity (40K bytes more storage than the 256-byte format), it is not recommended for normal 2200 operations since disk write is considerably slower than with the 256-byte sector format.

2.5 USING THE DISKETTE DRIVE

You must format a new diskette before you can use it to store programs or data files. Do not reformat a used diskette because formatting destroys any information recorded on the diskette. For this reason, never format or scratch diskettes containing packaged programs.

The permanent label on each diskette indicates it is protected from accidental overwriting when the write-protect slot is covered. You must uncover the write-protect slot to allow writing before attempting to format the diskette.

Formatting a Diskette for 2200 Use

You can format a diskette by using the $FORMAT DISK statement in the BASIC-2 language or by running the Wang-supplied Format Disk Platter utility. To format a diskette, proceed as follows:

1. Remove the diskette from its envelope. Check to see that the write-protect notch is uncovered.

2. Properly orient the diskette, as indicated by arrows on the label, before inserting it into the diskette drive (refer to Section 2.3). Be sure the diskette is firmly seated in the drive. Then close the drive latch.

3. Press the RESET button on the keyboard.

4. You initiate disk formatting using the Wang-supplied utility by mounting the System Utilities and entering LOAD RUN. A menu of utilities on the system disk is displayed. Select the Format Platter utility and answer the questions displayed on the screen to format the disk platter. It takes approximately 1 minute and 15 seconds to format a DSDD diskette.

    Alternately, you may use the $FORMAT DISK statement. The general form of the $FORMAT DISK statement is:

    $FORMAT DISK platter {file-number }
                          {disk-address}

Refer to Appendix A for a listing of suggested disk-addresses and to the BASIC-2 Disk Reference Manual for more information on the $FORMAT DISK statement.

Some examples of valid format statements are:

    $FORMAT DISK T/D10
    $FORMAT DISK T/D11
    $FORMAT DISK T#3

D10 is generally the address of the diskette drive, while D11 is generally the address of the fixed disk drive.

```
┌──────────────────────────── CAUTION ────────────────────────────┐
│                                                                  │
│  Formatting a disk platter overwrites all data previously        │
│  stored on the platter.  To prevent the accidental formatting    │
│  of the wrong disk platter, it is recommended that the           │
│  Wang-supplied format utility be used.                           │
│                                                                  │
└──────────────────────────────────────────────────────────────────┘
```

5. If formatting is unsuccessful, the system indicates a format error (ERR 93). Generally, format errors result from three causes.

    a. The drive latch is not tightly closed.
    b. The write-protect notch is covered.
    c. The diskette is defective.

    Remove the diskette from the drive and format another one.

```
┌───────────────────────────── NOTE ──────────────────────────────┐
│                                                                  │
│  If a diskette cannot be formatted, it cannot be used for        │
│  storage and should be discarded.                                │
│                                                                  │
└──────────────────────────────────────────────────────────────────┘
```

If the formatting procedure fails repeatedly with several diskettes, there may be a hardware problem with the diskette drive. Contact your Wang service representative.

Formatting a Diskette for Wang PC Interchange

In addition to the standard 2200 format, the 2275 also supports the Wang PC format (refer to Section 2.4). To format a diskette with the Wang PC format, follow the procedure for standard 2200 format. However, instead of using the $FORMAT DISK statement to invoke formatting, use the following statement:

    $GIO disk-address (0600 0700 70A0 4002 88D0 7040 0130 6A10 6802 4001
                    8B67, alpha-variable)

where: the alpha-variable is dimensioned to be 15 bytes long

The BASIC-2 $GIO statement formats the diskette into 512-byte sectors. Upon execution of the $GIO statement, Bytes 1-5 and 9-15 of the alpha-variable are used by the system, while Bytes 6-8 are set to the error return. Error return values are listed here.

    HEX(000000) if no errors
    HEX(000004) if echo error. Retry the command.
    HEX(010000) if ERR I98
    HEX(020000) if ERR I91
    HEX(040000) if ERR I94
    HEX(000100) if ERR I95
    HEX(000200) if ERR I93
    HEX(000400) if ERR I96

Appendix B further defines the error messages.

The following is an example of a BASIC-2 program that you can create and store as a utility. This program formats your diskettes with the Wang PC format.

```
10 DIM G$15
20 REM Format the diskette -----------------------------------------
25 $GIO /D10 (0600 0700 70A0 4002 88D0 7040 0130 6A10 6802 4001 8B67,
   G$)
30 IF STR(G$,6,3) = HEX(000000) THEN 50
40 IF STR(G$,6,3) = HEX(000004) THEN 20: ELSE STOP "Disk error"
50 STOP "Formatting Complete"
```

Disk Access Modes

Once a diskette has been formatted to contain the necessary sector information, it is ready for storing data and programs. Information can be maintained on 2200 diskettes in one (or both) of the following two modes:

1. The Automatic File Cataloging mode is an indirect method in which you assign each program and data file a name. You may later access the program or data by this name, without reference to its specific location on the disk.

2. The Absolute Sector Addressing mode is a direct method in which you access each sector by providing the specific sector address.

The Automatic File Cataloging mode is the recommended cataloging method used by most Wang software for maintaining data files. Under Automatic File Cataloging, the operating system maintains a catalog on each disk. The catalog consists of a Catalog Area, where program and data files are stored, and a Catalog Index, which contains the name of each file and its location in the Catalog Area. Whenever a new file is created, the system automatically records the file name and location. When a particular file is accessed, the system automatically looks up the file name in the Catalog Index to determine the file's location. Thus, you do not have to remember the exact sector location of each file on disk. Only the file names need be remembered. You can use a LIST DC statement to obtain the names of existing files.

Absolute Sector Addressing is typically used to record information on PC formatted diskettes. The Absolute Sector Addressing mode is composed of eight BASIC-2 statements and commands that enable you to read or write information in specific sectors on a formatted disk. You can not create a Catalog Index in this mode, and programs and files are not referenced by name. Files are identified only by reference to their starting sector addresses. Similarly, you must save or load records from a file by specifying a starting sector address. You are responsible for maintaining all file addressing information; the system does not automatically index your files.

Refer to the BASIC-2 Disk Reference Manual and Programming in BASIC for detailed information on both modes of disk addressing.

Defining a Catalog Index

In the Automatic Cataloging mode, you must create a Catalog Index on the diskette before any programs or data can be stored. A SCRATCH DISK statement performs this operation called "scratching the disk." Take care not to scratch a diskette with packaged programs or important files since a SCRATCH DISK statement overwrites a previous Catalog Index.

In a SCRATCH DISK statement, you specify the number of sectors to reserve for the Catalog Index and the last sector in the Catalog Area. The Catalog Index always begins at the first sector on a disk (sector numbering starts with zero) and occupies the number of sequential sectors that you specify. The Catalog Area begins immediately after the Catalog Index and occupies all sequential sectors up to and including the last sector you specify. The end of the Catalog Area is usually specified as the last available sector on the disk.

The size of the Catalog Index is defined with the LS parameter in a SCRATCH DISK statement. For example, LS = 10 indicates that 10 sectors are reserved for the Catalog Index. If no value is specified, the default value is 24.

The last sector in the Catalog Area is specified with the END parameter in a SCRATCH DISK statement. For example, END = 1279 indicates that Sector 1279 (the last accessible sector on a DSDD diskette, containing a total of 1280 sectors numbered from 0 to 1279) is the last sector to be used for the Catalog Area.

To scratch a diskette on the 2275 system diskette drive, perform the following steps:

1. Insert a formatted diskette in the diskette drive.

2. Enter a statement such as:

    SCRATCH DISK T/D10, LS = 20, END = 1279

3. Press RETURN. LS = 20 specifies that 20 sectors be reserved for the Catalog Index; END = 1279 specifies that Sector 1279 is the last sector to be used by the catalog. The number of sectors allocated for the catalog and data storage may be other values. Refer to the BASIC-2 Disk Reference Manual for further information on the SCRATCH DISK statement.

After a diskette is formatted and scratched, it is ready for data and program storage.

```
┌──────────────────────────── NOTE ────────────────────────────┐
│                                                               │
│  You can use a LIST DC T /disk-address statement to check the │
│  size of the Catalog Index. Entering the statement LIST DC    │
│  T/D10 after scratching disk D10 displays the following       │
│  message on the CRT:                                          │
└───────────────────────────────────────────────────────────────┘
```

                    INDEX SECTORS = 00020
                    END CAT. AREA = 01279
                    CURRENT END   = 00019
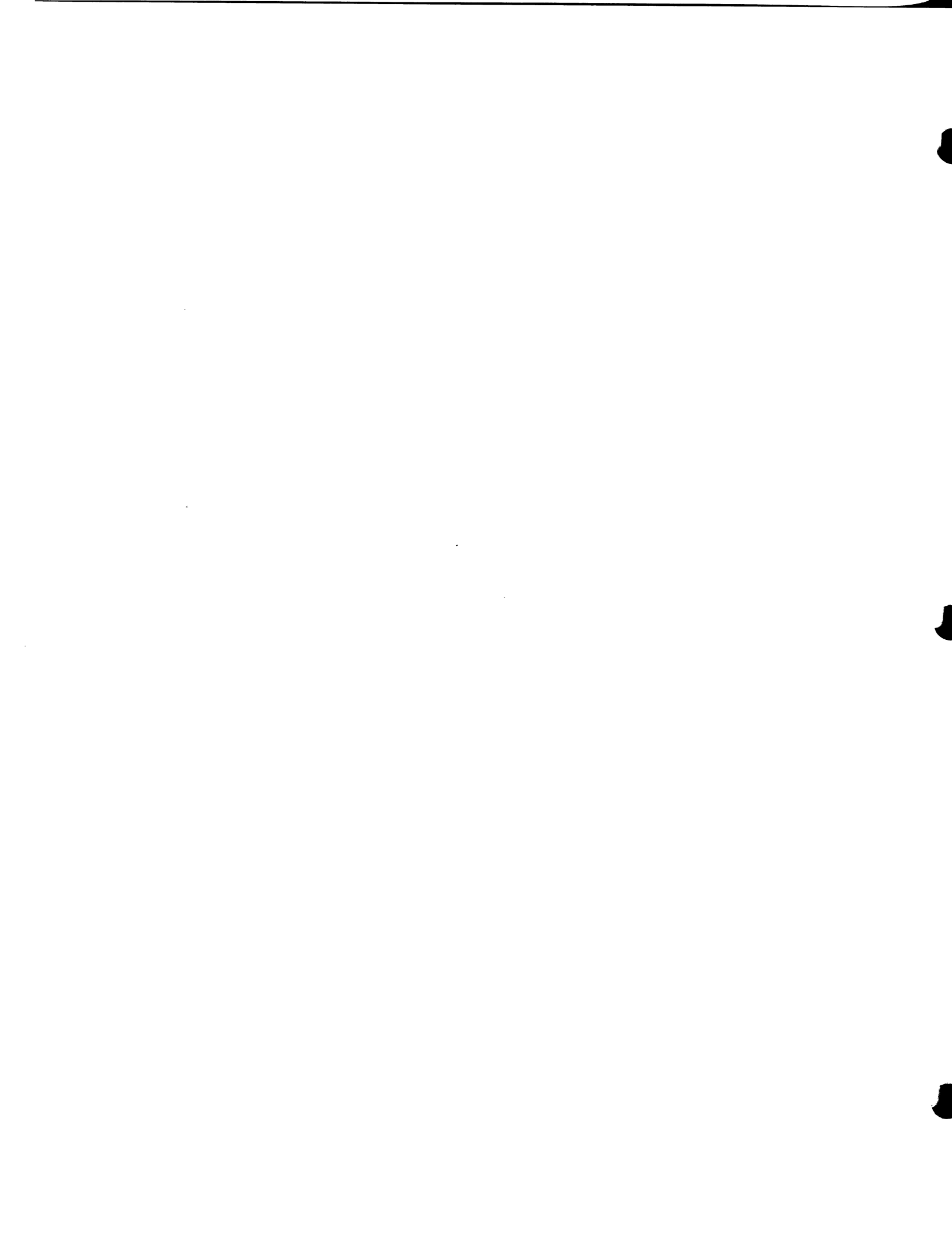
CHAPTER 3
USING THE WINCHESTER DISK DRIVE

3.1 OVERVIEW

     A Winchester disk drive is a fixed storage device. Like a diskette
drive, it contains a read/write head that can read information from the
disk within the drive or write information onto the disk. Unlike a
diskette drive, the Winchester is a sealed unit that stores information
on hard disk.

     When the disk in the Winchester drive is correctly formatted, it can
store approximately 10M bytes of information, or more than 30 times the
capacity of a single 320K byte diskette.

     The Winchester disk is blank until the System Software is copied from
the diskette onto the hard disk. After you copy the System Software onto
your Winchester, all system menus are available to you from the
Winchester.

     The procedures for formatting the fixed disk and installing system
files onto the Winchester disk are discussed in the remaining sections of
this chapter.

3.2 USING THE FIXED DISK DRIVE

     As with a diskette, you must format and scratch a Winchester disk the
first time it is used. The fixed disk should be formatted only when it
is first used since formatting the disk overwrites all information
contained on that disk.

Formatting a Disk

     You can format a disk either by running the Wang-supplied @FORMAT
utility or by using the $FORMAT DISK statement, as described in Section
2.5. The general form of the $FORMAT DISK statement is as follows:

          $FORMAT DISK platter {file-number }
                               {disk-address}

For example, if the address of the fixed disk is D11, enter a statement of the following form:

$FORMAT DISK T/D11

It takes approximately 3 minutes to format a fixed disk.

```
┌──────────────────── CAUTION ────────────────────┐
│                                                  │
│   Formatting a disk platter overwrites all data previously │
│   stored on the platter.  To prevent the accidental formatting │
│   of the wrong disk platter, use the Wang-supplied @FORMAT │
│   utility.                                       │
│                                                  │
└──────────────────────────────────────────────────┘
```

Defining a Catalog Index

The fixed disk drive supports both Automatic File Cataloging and Absolute Sector Addressing to control disk operations. (Refer to "Disk Access Modes" in Section 2.5.) The Automatic File Cataloging mode is the recommended method for maintaining data files on the fixed disk.

The process of creating a catalog on the fixed disk is identical to that of creating a catalog on the diskette. The ending sector of the fixed disk is 38,783.

An example of a SCRATCH DISK statement follows, assuming the fixed disk has an address of D11 and 25 sectors are desired for the catalog index.

SCRATCH DISK T/D11, LS = 25, END = 38783

The SCRATCH DISK statement is explained in detail in Section 2.5 and in the BASIC-2 Disk Reference Manual.

```
┌──────────────────── CAUTION ────────────────────┐
│                                                  │
│   If a Catalog Index and Catalog Area have previously been │
│   established, the SCRATCH DISK statement will overwrite the │
│   existing information on the specified disk.    │
│                                                  │
└──────────────────────────────────────────────────┘
```

Refer to the BASIC-2 Disk Reference Manual for information on Absolute Sector Addressing.

3.3 INSTALLING SYSTEM FILES

If the 2275 is the principle disk unit on the 2200 system, you should first load the System Software from the system diskette and copy the System Software onto a formatted and scratched fixed disk drive. You can thereafter load the system programs from the fixed disk drive. The original system diskette can serve as a backup for the system disk. After you have copied the system programs onto the fixed disk, the programs can be recopied onto a separate diskette to create a duplicate backup system diskette.

Use the Install System Files utility provided on the system platter to copy system files from the diskette drive to the fixed disk drive. To use this utility, type LOAD RUN and then press RETURN. Select Install System Files from the menu. The program provides prompts that require you to supply the details of the file transfer. The Install System Files utility can only transfer system files, i.e., files with names that begin with the "@" character.

After you have copied the system files onto the fixed disk, you can make extra backup copies of the software by inserting a formatted and scratched diskette into the drive. Then, you can copy the system files onto the diskette from the fixed disk drive.

You can use the Install System Files utility to update system files by overwriting existing system files. The Install System Files utility is recommended for system updates, since it overwrites only the specific files being changed and leaves the remainder of the disk intact.

3.4 BACKING UP THE WINCHESTER DISK

It is possible to lose information from a Winchester disk through hardware failure, software problems, or operator error. Therefore, it is important to periodically back up important data recorded on the Winchester. You can copy selected files to diskette using the @MOVEFIL utility. You can back up the entire Winchester to diskettes using the @BACKUP utility. These utilities are provided on the system platter.

You can back up to a tape cartridge if your system includes a 2229 Tape Drive. Refer to the 2229 Cartridge Tape Drive User Manual for more information.

APPENDIX A
DISK DRIVE ADDRESSES

The disk unit address is 10, 20, or 30 as specified on the device controller to which the 2275 is attached. If the 2275 is the principle disk unit on the 2200 system, the unit address is usually set to 10. The following charts show how individual drives can be addressed.

For the 2275-10:

	Unit 10	Unit 20	Unit 30
diskette	/D10 (or /B10)	/D20 (or /B20)	/D30 (or /B30)
Winchester	/D11 (or /310)	/D21 (or /320)	/D31 (or /330)

For the 2275-20:

	Unit 10	Unit 20	Unit 30
1st Winchester	/D10 (or /B10)	/D20 (or /B20)	/D30 (or /B30)
2nd Winchester	/D11 (or /310)	/D21 (or /320)	/D31 (or /330)

APPENDIX B
SYSTEM HARDWARE ERROR MESSAGES AND RECOVERY PROCEDURES

B.1 DISK ERROR MESSAGES AND RECOVERY PROCEDURES

The following list explains the significance of each system error message and suggests possible recovery procedures. If these procedures fail, call your Wang service representative. A system error is usually serious enough to warrant executing a control memory diagnostic. However, it may be possible to resume execution of the currently loaded application program by pressing RESET and Special Function Key '15. If the error is reported again, a memory diagnostic should be run to locate the defective memory location. Refer to your Central Processing Unit's Introductory Guide to run a memory diagnostic.

Several possible disk errors may occur while you are trying to load disk information. The recommended recovery procedure involves consulting the following description of each possible disk error to determine if the problem can be corrected and then attempting to reload. Should successive failures occur, call your Wang service representative. All disk errors are more fully documented in the BASIC-2 Disk Reference Manual and the BASIC-2 Language Reference Manual.

ERR D82   FILE NOT IN CATALOG

Cause: You specified a nonexistent file name or attempted to load a data file as a program file or a program file as a data file.

Recovery: Make sure the correct file name is used, the proper diskette is mounted, and the proper drive is accessed.

ERR I90   DISK HARDWARE ERROR

Cause: The disk did not respond properly to the system at the beginning of a read or write operation; the read or write has not been performed.

Recovery: Press RESET and run the program again. If the error recurs, ensure that the disk unit is powered on and that all cables are properly connected. If the error still occurs, contact your Wang service representative.

ERR I91   DISK HARDWARE ERROR

Cause: A disk hardware error occurred because the disk unit is not
            ready.

Recovery: Press RESET and run the program again. If the error recurs,
            check to ensure that the program is addressing the correct
            disk platter. Be sure the disk is turned on, properly set up
            for operation, and all cables are properly connected. If the
            error persists, call your Wang service representative.

ERR I92   TIMEOUT ERROR

Cause: The device did not respond to the system in the proper amount
            of time. In the case of the disk, the read or write
            operation has not been performed.

Recovery: Press RESET and run the program again. If the error
            persists, be sure the disk platter has been formatted. If
            the error still occurs, contact your Wang service
            representative.

ERR I93   FORMAT ERROR

Cause: The system detected a format error during a disk operation.
            This error indicates that certain sector-control information
            is invalid. If the error occurred during a read or write
            operation, the platter may need to be reformatted. If the
            error occurred during formatting, there may be a flaw on the
            platter's surface.

Recovery: Format the disk platter again. If the error persists,
            replace the media. If the error continues, call your Wang
            service representative.

ERR I95   DEVICE ERROR

Cause: A device fault occurred indicating that the disk could not
            perform the requested operation. This error may result from
            an attempt to write to a write-protected platter.

Recovery: If writing, make sure the platter is not write-protected.
            Repeat the operation. If the error persists, power the disk
            off and then on, and repeat the operation. If the error
            still occurs, call your Wang service representative.

ERR I96   DATA ERROR

Cause: For read operations, the check sum calculations (CRC or ECC)
             indicate that the data read is incorrect. The sector read
             may have been written incorrectly. For disk drives that
             perform error correction (ECC), the error correction attempt
             was unsuccessful. For write operations, the LRC calculation
             indicates that the data sent to the disk was incorrect. The
             data has not been written.

Recovery: For read errors, rewrite the data. If read errors persist,
             the disk platter should be reformatted. For write errors,
             the write operation should be repeated. If write errors
             persist, ensure that all cable connections are properly made
             and are tight. If either error persists, contact your Wang
             service representative.

ERR I97   LONGITUDINAL REDUNDANCY CHECK ERROR

Cause: A longitudinal redundancy check error occurred when reading
             or writing a sector. Usually, this error indicates a
             transmission error between the disk and the CPU. However,
             the sector being accessed may have been previously written
             incorrectly.

Recovery: Run the program again. If the error persists, rewrite the
             flawed sector. If the error still persists, call your Wang
             service representative.

ERR I98   ILLEGAL SECTOR ADDRESS OR PLATTER NOT MOUNTED

Cause: The disk sector being addressed is not on the disk, or the
             disk platter is not mounted. (The maximum legal sector
             address depends upon the disk model used.)

Recovery: Correct the program statement in error, or mount a platter in
             the specified drive.

ERR I99   READ-AFTER-WRITE ERROR

Cause: The comparison of read-after-write to a disk sector failed,
             indicating that the information was not written properly.
             This error usually indicates that the disk platter is
             defective.

Recovery: Write the information again. If the error recurs, try a new
             platter; if the error persists, call your Wang service
             representative.

B.2 SYSTEM (EXECUTION) ERROR MESSAGES

The system initially checks each text line for various types of errors as you enter the line during program resolution and execution. The system responds to an error condition by producing an audible tone, terminating the current operation immediately, displaying the erroneous line, and presenting beneath it the message "ERR" followed by an error code, with an arrow pointing to the approximate position of the error. Note that the system stops error scanning when the first error is detected. Thus, if a line contains more than one error, only the first is detected and reported by the system. Some errors can be recovered under program control.

The error codes with a two-digit number preceded by a letter prefix (e.g., "A04") occur once the system program has been given control. The letter identifies the particular class of errors to which the error belongs, while the two-digit number identifies the specific error condition. (For example, an error commonly encountered during text entry is S13, "Missing Comma." The "S" indicates a syntax error, and the "13" identifies the error as "Missing Comma.") There are seven classes of error conditions, each identified by a unique letter prefix in the error code. These error classes and the letter prefixes that identify them are as follows:

Class of Errors	Letter Prefix
Miscellaneous	A
Syntax	S
Program	P
Computation	C
Execution	X
Disk	D
I/O	I

Errors in the first three classes listed (Miscellaneous, Syntax, and Program) are detected during text entry or program resolution and cause the system to terminate the current operation and display an error message. You must correct the error before proceeding with further operations. Errors of this kind are called "nonrecoverable" because they cannot be recovered under program control.

Errors in the four remaining classes (Computation, Execution, Disk, and I/O) typically occur during program execution and can be recovered under program control without aborting the program or disrupting the display with an error message. Errors that can be intercepted by the program before the operating system intervenes are called "recoverable" errors. Three BASIC-2 instructions are provided for intercepting and responding to recoverable errors: the SELECT ERROR statement, the ERR function, and the ERROR statement.

A complete list of the errors included in each class and their specific recovery procedures is included in the BASIC-2 Language Reference Manual. Refer to this manual for more information about error recovery under program control.

APPENDIX C
2275 SPECIFICATIONS

Size
    Height: 14.9 in. (37.8 cm)
    Width: 6.5 in. (16.5 cm)
    Depth: 16.0 in. (40.6 cm)

Weight
    23 lb (10.4 kg), approximately

Compatible 2200 Systems
    VP, LVP, LVPC, MVP, and MVPC

2200 Storage Capacity
    Model 2275-10
        10M bytes, fixed; 320K bytes, removable
    Model 2275-20
        20M bytes, fixed

Winchester Formatting
    256 bytes per sector
    32 sectors per track
    304 tracks per side
    (one track unavailable for user data)
    2 dual-sided disks
    10M bytes capacity

Diskette Drive (Model 2275-10 only)
    5.25-inch DSDD diskettes

DSDD Diskette Formatting
    256-byte diskette formatting
      16 sectors per track
      40 tracks per side
      320K bytes capacity

    512-byte diskette formatting
      9 sectors per track
      40 tracks per side
      360K bytes capacity

Power Requirements
    98 to 128 VAC at 115 V (1.8 AMP)
    196 to 256 VAC at 230 V (.9 AMP)
    90-watt linear power supply

Operating Temperature
    50°F to 90°F (10°C to 32°C)

Relative Humidity
    10% to 80%, noncondensing

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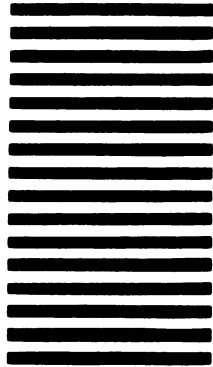Cut along dotted line.

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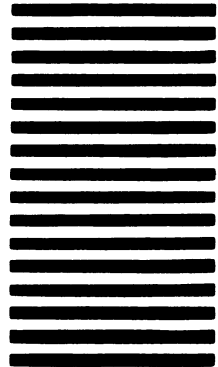
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