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Wangwriter

2236DE Interactive Terminal Emulation Reference Manual

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2nd Edition — June 1983

700-7564A

WANG LABORATORIES, INC., ONE INDUSTRIAL AVENUE, LOWELL, MA 01851 • TEL: 617/459-5000, TWX 710-343-6769, TELEX 94-7421

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PREFACE

This manual provides instructions for implementing the Wangwriter/ 2236DE Terminal Emulation software. Familiarity with both the Wangwriter and 2200 system is necessary when implementing and using the emulation software.

Chapter 1 lists the minimal hardware necessary to implement the emulation software, instructions on installing and loading the emulation software, and instructions for running the System Parameter Specification utility.

Chapter 2 explains keyboard differences between the Wangwriter terminal and the 2236DW terminal, as well as general differences in terminal operations when running the emulation software.

Chapter 3 explains printing considerations using the Wangwriter printer as printer 204 under the 2200 configuration.

Chapter 4 explains the Document Transfer utility using 2200 Word Processing, supported by the emulation software.

The following manuals are referred to:

- The 2200 Word Processing Operator's Guide (700-6937B)
- The Wangwriter Reference Manual (700-6574B)
- The Wangwriter Reference Manual Addendum (700-6574B.01)
- The 2200 introductory manual appropriate to your system
  - 2200 MVP Introductory Manual
  - 2200 LVP Introductory Manual
  - 2200 SVP Introductory Manual

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CHAPTER 1
THE EMULATOR SOFTWARE

1.1 INTRODUCTION

The Wangwriter/2236DE Terminal Emulation software allows you to configure a Wangwriter terminal, connected either locally or remotely, with a 2200 LVP, MVP, or SVP system. Once connected and configured with the 2200 system, the Wangwriter terminal emulates a 2236DW terminal and can access all 2200 series data and word processing applications. In addition, the emulation software allows you to transfer a document from a 2200 library to a Wangwriter archive diskette or the reverse, through the Document Transfer utility supported under 2200 word processing.

1.2 HARDWARE AND SOFTWARE REQUIREMENTS

To implement the Wangwriter/2236DE Terminal Emulation software, you need the following equipment:

1. A Wangwriter II (single or dual-diskette system) with its associated CRT and standard keyboard

2. A Foreground Telecommunications board installed within the Wangwriter and connected to the 2200 configuration by an RS-232-C-compatible terminal cable

3. A copy of the Wangwriter/2236DE Terminal Emulation software on a Wangwriter mini-floppy diskette

4. A 2200 MVP, LVP, or SVP configuration (you configure the Wangwriter terminal as a 2200 terminal through the Partition Generation utility)

In addition to the required hardware and software, you must have a 2200 Word Processing Release 2.1 or greater to run the Document Transfer utility.

1.3 SPECIAL FUNCTION KEYS AND THE FUNCTION STRIP

When you use 2200 series data or word processing applications, you must use Special Function (SF) keys frequently. Table 1-1 lists the keys on the top row of the Wangwriter terminal (INDENT, PAGE, CENTER, etc.) and the 2200 terminal SF keys they represent.

Table 1-1. 2200 Special Function Keys on the Wangwriter Terminal

Wangwriter Keyboard Key	2200 SF Key	
	Unshifted Wangwriter Keyboard Key	SHIFT + Wangwriter Keyboard Key
INDENT	SF'00	SF'16
PAGE	SF'01	SF'17
CENTER	SF'02	SF'18
DECTAB	SF'03	SF'19
FORMAT	SF'04	SF'20
MERGE	SF'05	SF'21
NOTE	SF'06	SF'22
STOP	SF'07	SF'23
SRCH	SF'08	SF'24
REPLC	SF'09	SF'25
COPY	SF'10	SF'26
MOVE	SF'11	SF'27
COMMAND	SF'12	SF'28
↕	SF'13	SF'29
Blank key	SF'14	SF'30
GO TO PAGE	SF'15	SF'31

You can use the blank function strip that came with your Wangwriter to put the information in Table 1-1 directly on your keyboard. Figure 1-1 illustrates how to write in the 2200 SF keys. Use either a pen or pencil to write on the strip; a pencil eraser removes any markings.

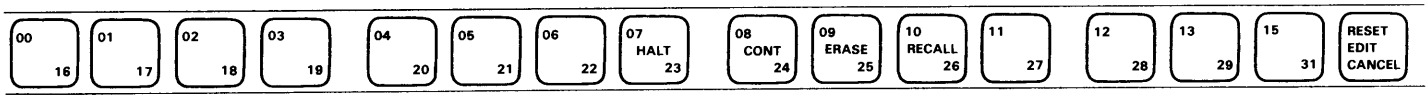

Figure 1-1. 2200 Special Function Keys on the Wangwriter Function Strip

1.4 INSTALLING AND RUNNING THE EMULATION SOFTWARE

There are three steps to installing and running the emulation software.

1. Establish a physical connection between the 2200 system and the Wangwriter terminal

2. Master Initialize the 2200 system

3. Load the emulation software

1.4.1 Establishing a Physical Connection

You can establish a physical connection between the Wangwriter terminal and the 2200 system in two ways: locally, with a direct connection to a 2200 MVP, LVP or SVP system; or remotely, with a connection through modems and telephone lines to a 2200 system.

Local Connection

Table 1-2 outlines local connections from the Wangwriter terminal to the 2200 system. All physical connections are made with a RS-232-C direct connection cable.

Table 1-2. Local Connection: Wangwriter Terminal to 2200 System

2200 System	Maximum Distance	Connected to
MVP	2000 feet (609.6 meters)	Model 2236 MXD or MXE Terminal Processor
LVP	2000 feet (609.6 meters)	Model 2236 MXD or MXE Terminal Processor
SVP	50 feet (15.2 meters)	The Terminal Connection on the back of the SVP CPU, or to a port on the Option-W Terminal Processor

You must set the transmission rate of the port on the 2200 terminal processor to which the Wangwriter terminal is connected at 19200 baud. Refer to your system's 2200 introductory manual for information on how to set the transmission rate.

Remote Connection

You must install a modem when the Wangwriter terminal is remotely connected to a 2200 system through telephone lines. The modem you use must be asynchronous and RS-232-C-compatible. Wang manufactures an asynchronous modem that supports communication at 300 and 1200 bits per second (bps). You can purchase the Wang Asynchronous Modem (Part No. WA3451) from your Wang sales representative.

Follow the manufacturer's instructions for installing the appropriate type of modem or null modem for the remote communication link. Attach the Wangwriter to the modem or null modem with an RS-232-C/V.24-compatible cable, with 25-pin male RS-232-C/V.24 plugs at both ends. The back panel of the modem has an appropriate female 25-hole plug, called an RS-232-C serial asynchronous port, that enables you to make this connection.

The transmission rate for the remote connection depends on the modem you use. Refer to the manufacturer's instructions and to your system's 2200 introductory manual for information on how to set the transmission rate.

1.4.2 Master Initializing the 2200 System

Master Initialization is the process of powering up components of the 2200 system, loading the operating system and BASIC-2 interpreter (from the system platter), and exercising the CPU to determine if any malfunctions exist. When you load the operating system, the Partition Generation utility (system configuration) runs automatically.

The Partition Generation utility divides the resources of the 2200 system among several users. The Wangwriter terminal is regarded as a 2200 terminal when running the emulation software and must be included in the 2200 system configuration. To do this, you must modify the Partition Generation utility to include either at least one partition assigned to the port the Wangwriter is connected to, or at least one partition assigned to Terminal 0 (zero). Division of any other resources through this utility depends on the 2200 series data or word processing application you want to use. Refer to your system's 2200 introductory manual for a detailed description of both Master Initialization procedures and the Partition Generation utility.

NOTE

If you plan to use the attached Wangwriter printer as a local terminal printer when running the emulation software, you must enter printer device 204 into the device table when you configure the 2200 system. Read Chapter 3 for information on how you use the attached Wangwriter printer as a local terminal printer.

1.4.3 Loading the Emulation Software

Once you have established the physical connection between the Wangwriter terminal and 2200 system and you have Master Initialized the 2200 system, you can load the emulation software.

To load the emulation software, perform the following steps:

1. Put the emulation software diskette into the Wangwriter system drive (use the lower drive, if it is a dual-diskette drive). Cover the Write Protect slot on the emulation software diskette with a tab.

2. Close the disk drive latch and turn the power on. The system loads the emulation software into memory, and the following prompt appears:

   Are all the system parameter specifications correct ? Y

   See Section 1.6 if any problems occur when you load the emulation software.

   In order for the emulation software to perform properly, you must define certain parameter specifications for the emulation and for the Foreground Telecommunications board.

   Press N or n if this is the first time you are using the emulation software. This loads the Wangwriter/2236DE Terminal Emulation System Parameter Specification utility. See Section 1.5 for instructions on running this utility.

   Press RETURN or press Y or y if you have already defined and modified the parameter specifications and they are correct. The Self-Identification message appears on the screen.

1.5 THE SELF-IDENTIFICATION MESSAGE

The Self-Identification message has the following format:

model rev-# baud-rate char-format char-set

Where:

model	Specifies the terminal model number
rev-#	Specifies the revision number of the terminal software, preceded by R
baud-rate	Specifies the rate of transmission, followed by a bps (bits per second) indication. Valid baud rates are 300, 600, 2400, 4800, 9600, and 19200 BPS

char-format — Specifies the communication character format. The communication character format consists of the number of data bits (7 or 8), followed by the parity (E = even parity, O = odd parity, n = no parity).

char-set — Specifies the version of the keyboard and character set, enclosed in parentheses.

The Wangwriter terminal shows the following Self-Identification message after you load the emulation software:

```
2236WW R01 19200BPS 8+O (USA)
```

The 2236WW model number indicates that the Wangwriter terminal is now emulating the 2236DW terminal. The WW indicates that it is a Wangwriter Word Processing terminal. Throughout the rest of this manual, 2236WW refers to a Wangwriter terminal running with the emulation software.

You must reset the system after the Self Identification message appears. Press GL + shifted ! and GL + shifted CANCEL. The following message appears:

```
READY (BASIC-2) PARTITION XX
:
```

XX is a number from 01 to 16, depending on how the 2200 system is configured. Once this message appears, you can load whatever 2200 series data or word processing application you want to use by following the normal loading procedures for that application.

1.6 THE SYSTEM PARAMETER SPECIFICATION UTILITY

You must enter parameter specifications correctly. The System Parameter Specification utility runs before any major hardware initialization. The system does not perform any major error checking. Follow these step-by-step procedures exactly the way they are presented here.

Figure 1-2 shows the System Parameter Specification utility screen. The cursor is automatically positioned under the answer space for the first question.

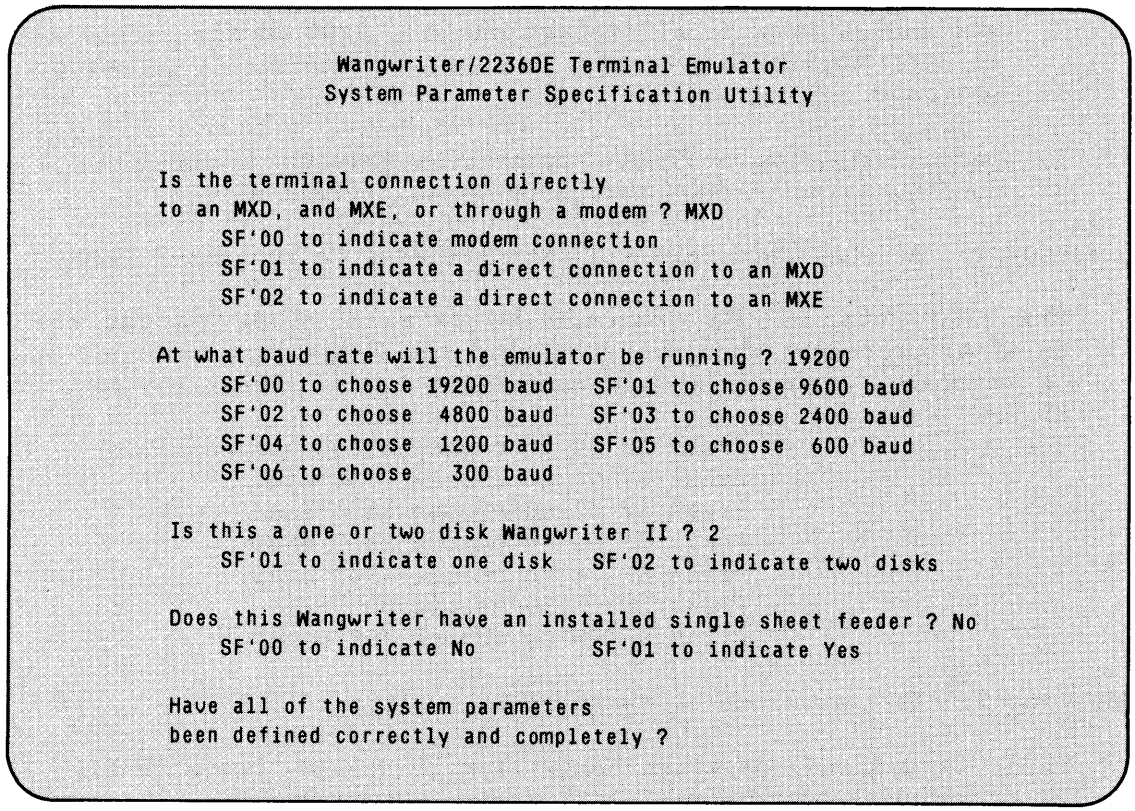

Figure 1-2. System Parameter Specification Utility, Screen 1

The first four questions have preset default values, which appear directly after the question mark. You can change the default value by pressing the Special Function (SF) key that applies; the cursor automatically moves to the next field. You can keep the default value by pressing the RETURN key, which moves the cursor to the next field.

NOTE

Only the values you enter by pressing the appropriate SF key are saved as the parameter specifications on the emulation software diskette; any characters you type on the screen are ignored.

Question 1: Is the terminal connection directly to an MXD, an MXE, or through a modem ? MXD

Three kinds of connections are possible:

1. MXD indicates a local connection to a 2200 configuration through an MXD terminal processor, a triple controller, or an SVP, LVP, or VP terminal processor. Press SF'00.

2. MXE indicates a local connection to a 2200 configuration through an MXE terminal processor or an SVP terminal processor with Option-W. Press SF'01.

3. Modem indicates a remote connection through a modem to a 2200 configuration through telephone lines. Press SF'02.

Question 2: At what baud rate will the emulator be running ? 19200

The baud rate is the transmission rate to which you set the 2200 terminal processor when you connected the Wangwriter terminal locally or remotely, as explained in Subsection 1.4.1. Press the appropriate SF key.

Press SF'00 to choose 19200 baud
Press SF'01 to choose 9600 baud
Press SF'02 to choose 4800 baud
Press SF'03 to choose 2400 baud
Press SF'04 to choose 1200 baud
Press SF'05 to choose 600 baud
Press SF'06 to choose 300 baud

Question 3: Is this a one or two disk Wangwriter II ? 2

If it is a single-diskette Wangwriter II system, press SF'01. If it is a dual-diskette Wangwriter II system, press SF'02.

Question 4: Does this Wangwriter have an installed single sheet feeder ? No

A single sheet feeder is not part of the standard Wangwriter printer. If you do have this feature, a yes response ejects the paper downwards and automatically loads a new sheet when printing.

If you do not have an installed single sheet feeder, press SF'00. If you do have an installed single sheet feeder, press SF'01.

Question 5: Have all of the system parameters been defined correctly and completely ? _

The cursor blinks when you reach this question. Look Questions 1 through 4 over very carefully and make sure that your answers are correct and that each question has a value. You can enter either a yes or no response.

1. Yes -- Press Y or y if you entered the parameter specifications completely and correctly. A yes response saves the parameter specifications you just entered on the emulation software diskette, and the Self-Identification message (see Section 1.5) appears on the screen.

2. No -- Press N or n if you did not enter the parameters completely or correctly, or if you want to reenter the parameter specifications. A no response causes another question to appear on the screen (see Figure 1-3).

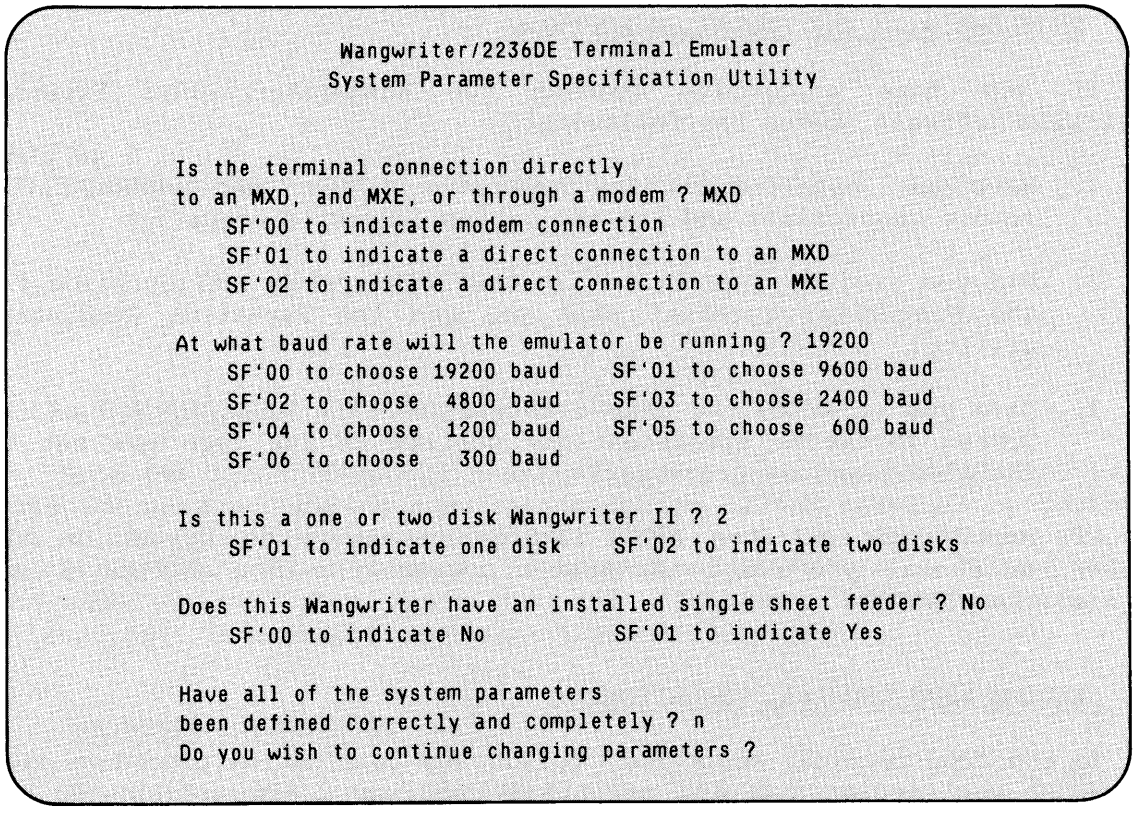

Figure 1-3. System Parameter Specification Utility, Screen 2

Question 6: Do you wish to continue changing parameters ? _

The cursor blinks when you reach this question. You can enter either a yes or no response.

1) Yes -- Press Y or y. The cursor moves back to the first question and you can enter new values.

2) No -- Press N or n. This is the response you enter to end parameter editing. The screen clears and the following message appears:

   Emulation aborted due to insufficient parameter specifications

   You can turn the Wangwriter system drive off when this message appears and remove the emulation software diskette from the diskette drive. You must run the System Parameter Specification utility the next time you use the emulation software.

1.7 PROBLEMS WITH THE EMULATION SOFTWARE

If you have a problem loading the Wangwriter/2236DE Terminal Emulation software, check the following:

1. Have you installed all the necessary cables (and modems, if a remote connection) and are the cables connected properly?

2. Did you include a partition in the 2200 system configuration for the Wangwriter terminal when you ran the Partition Generation utility?

3. Have you selected the same transmission rate in Question 2 of the System Parameter Specifications utility as the rate you set on the 2200 terminal processor?

If you cannot get the READY (BASIC-2) message to appear on the 2236WW, make sure you reset the system correctly: GL + shifted ! and GL + shifted CANCEL.

1.8 ENDING 2200 TERMINAL EMULATIONS

To end 2200 terminal emulation, follow any termination procedure that the 2200 application you are executing requires. After following the procedure, you can end the terminal emulation by powering off the Wangwriter system.

CHAPTER 2
DIFFERENCES BETWEEN THE 2236DW AND THE 2236WW

2.1 INTRODUCTION

Once the READY (BASIC-2) message appears, you can run any 2200 series data and word processing application on the 2236WW terminal by following the normal loading procedures for that application. There are two operating differences between the 2236WW and 2236DW terminal that affect the application when you run it: keyboard layout and terminal attributes. This chapter explains these differences.

2.2 KEYBOARD DIFFERENCES

The keyboards of the 2236WW and the 2236DW terminals are different: some 2236DW keys are not present on the 2236WW keyboard, and some of the 2236WW keys do not produce the same results as the 2236DW keys. You must press certain key combinations on the 2236WW terminal to emulate the 2236DW key or function. Table 2-1 lists the 2236DW key or function in the left column and the 2236WW key combination in the right column. Three general notes apply:

1. All combinations work with the caps lock set or not set unless specified. The 2236WW caps lock key combination is the first combination listed on Table 2-1.

2. The GL key can be shifted or not shifted before the key combination is performed.

2. For any key other than the GL key, "shifted" means you must hold the SHIFT key down when you press the key or key combination; "unshifted" means you should not use the SHIFT key.

Table 2-1. Keyboard Differences Between the 2236DW and the 2236WW

2236DW Key or Function	2236WW Key Combination
Caps lock, upper case (setting the 2236DW terminal to A/A with the toggle switch)	GL + shifted !
Caps lower, normal keyboard (setting the 2236DW terminal to A/a with the toggle switch)	GL + unshifted !
RESET	GL + shifted CANCEL (caps lock must be set)
HALT	GL + STOP
CONTINUE	GL + SRCH
CANCEL/EDIT	CANCEL
RECALL	GL + COPY
ERASE from cursor position to end of line	GL + unshifted REPLC
ERASE entire line	GL + shifted REPLC
DECTAB	GL + DEC TAB
GL	GL + COMMAND
LOAD	shifted EXECUTE
RUN	unshifted EXECUTE
< (less than sign)	shifted , (comma)
> (greater than sign)	shifted . (period)

2.3 TERMINAL OPERATION DIFFERENCES

Table 2-2 outlines the main differences in the screen layouts, cursor presentation, and printing between the 2236DW and 2236WW terminals.

Table 2-2. Terminal Operations Differences

PARAMETERS	2236DW TERMINAL	2236WW TERMINAL
Self-Identification Message	2236DW R04 19200BPS 8+0 (USA)	2236WW R01 19200BPS 8+0 (USA)
Main Functional Difference	Supports a local screen dump	Supports a local screen dump and a Document Transfer utility allowing for document transfer between a Wangwriter archive diskette and a 2200 WP library
SHIFT LOCK Key	Affects the alpha keys only by placing them in uppercase	Affects the entire keyboard by placing all keys in uppercase
Blinking Attributes	Allows for the selection of a blinking attribute on a character	Does not allow for the selection of a blinking attribute on a character
Cursor States	There are three cursor states states: steady on; off; and on with blinking	There are two cursor states: off, and on with blinking (no steady on)
Edit Mode Indicators (programming applications)	When you entering edit mode, the cursor changes from from steady on to blinking	Entering edit mode is indicated by "reversing" the selected attribute (no cursor). See Table 2-3 for the reversed attributes.
Character Sets	Supports normal and alternate character sets	Supports the same 2236DW normal and alternate character sets except for HEX(80). The HEX(80) on a 2236DW terminal is a space in the normal character set and a dotted space in the alternate character set. A HEX(80) on the 2236WW terminal is a dotted space in both character sets.
Box Graphics	Supports 24 lines for box graphics	Does not support 24 lines for box graphics. If a box graphic falls on the bottom of the 24th line, the line does not appear then or when the box scrolls upwards.

2.4 EDIT MODE INDICATORS

When you enter edit mode on the 2236WW terminal, the attributes are reversed from the 2236DW terminal as shown in Table 2-3.

Table 2-3. Edit Mode Indicators on the 2236WW Terminal

2236DW Attribute	2236WW Attribute
Normal	Bright Reverse Video Underline
Bright	Reverse Video Underline
Underline	Bright Reverse Video
Bright Underline	Reverse Video
Reverse Video	Bright Underline
Bright Reverse Video	Underline
Reverse Video Underline	Bright
Bright Reverse Video Underline	Normal

CHAPTER 3
THE WANGWRITER PRINTER AS A LOCAL TERMINAL PRINTER

3.1 INTRODUCTION

You can use the Wangwriter printer attached to the 2236WW terminal as a local terminal printer, which is printer device 204 in the 2200 configuration. The Wangwriter printer can perform local screen dumps or print a 2200 word processing document. You can also use it to write printer programs in BASIC.

When you use the Wangwriter printer as a local terminal printer:

1. Do not run the Document Transfer utility while background printing a 2200 document. Background printing means that you selected the Queue Print Request option to print a 2200 document.

2. Do not pull the paper load lever or press the printer keypad keys unless you are printing, as these actions may damage the terminal screen display.

Sections 3.2 and 3.3 concern isolated printer control codes and printer control code sequences. The codes are applicable only when you access the Wangwriter printer as a local 2236WW printer through a BASIC program. Section 3.2 lists the isolated control codes you can and cannot use in a BASIC program, and what function the code directs the printer to execute. Section 3.3 lists the control code sequences the Wangwriter printer supports and provides examples of how you can use the control code sequences in a BASIC program.

3.2 ISOLATED CONTROL CODES

Table 3-1 lists the isolated control codes for programmed printer applications.

Table 3-1. Isolated Printer Control Codes

Hexadecimal Code	Meaning/Description
HEX(00) to HEX(01)	NULL. The printer does not execute these codes.
HEX(02)	INITIATE ESCAPE CODE SEQUENCE. This code directs the printer to start an escape sequence (see Subsection 3.2.2).
HEX(03) to HEX(06)	NULL. The printer does not execute these codes.
HEX(07)	BELL. This code directs the printer to generate an audio alarm. The printer executes the code without regard for current data in the line buffer.
HEX(08)	BACKSPACE. This code directs the printer to print the contents of the line buffer. The buffer pointer is placed at the last entered character (nondestructive backspace).
HEX(09)	NULL. The printer does not execute this code.
HEX(0A)	LINE FEED. This code directs the printer to print the contents of the line buffer using the Execution Sequence (see Subsection 3.2.2) and then advance the paper one line according to the currently selected line feed increment.
HEX(0B)	VERTICAL TAB. This code directs the printer to print the contents of the line buffer using the Execution Sequence (see Subsection 3.2.2) and then advances the paper to the next vertical tab stop. Vertical tabs are assumed to be located at one inch intervals starting at the top-of- form position.
HEX(0C)	FORM FEED. This code directs the printer to print the contents of the line buffer and then advance the paper to the top of the next form using the Execution Sequence (see Subsection 3.2.2).
HEX(0D)	CARRIAGE RETURN. This code directs the printer to print the contents of the line buffer immediately. If automatic line feed is enabled, the printer advances the paper to the next line. If the printer attributes bold and underscore are enabled, with HEX(0F) as the escape sequence terminator, the printer disables the attributes.
HEX(0E)	ATTRIBUTE ENABLE. This code directs the printer to enable the printer attributes for all characters sent to the printer after receiving this code.

Table 3-1. Isolated Printer Control Codes (continued)

Hexadecimal Code	Meaning/Description
HEX(0F)	ATTRIBUTE DISABLE. This code directs the printer to disable the selected printer attributes.
HEX(10) to HEX(8F)	These codes are all part of a font. The printer treats Undefined codes as ASCII spaces (HEX(20)).
HEX(E4)	SET HOME. This code allows you to specify a zero point on a printed form (normally this defaults to the upper left corner). You can use this code in conjunction with the HEX(E7) vector to direct the printer to position the printed form at any desired point, then define the zero coordinate there.
HEX(E7)	MOVE WITH RESPECT TO THE CURRENT HOME POSITION. This code directs the printer to begin a multibyte sequence defining a vector, and provides you with the ability to move a form in any direction in units of specified printer increments (vertical and horizontal).
HEX(E8xxxx)	SET LEFT MARGIN. This code allows you to select a left margin distance from the current home position that is an integer multiple of 1/60 inch: xxxx equals the margin distance (two's complement hexadecimal format) represented in a number of 1/60 inch increments. For example, "PRINT HEX(E80078)" sets a left margin 2 inches to the right of the current home position.
HEX(E9yyff)	SET LINE FEED SPACING. This code allows you to select a nonstandard line feed spacing that is a multiple of 1/48 inch: yy equals an integer multiple of 1/48 inch; ff is ignored.
HEX(FA)	REVERSE LINE FEED. This code directs the printer to print the contents of the line buffer and then move the platen in a reverse direction by an amount equal to the currently selected line feed size.

3.3 EXECUTION SEQUENCE

Control codes embedded within a line of printable data cause the current data in the printer buffer to print before the printer executes any control code or escape code sequence. Two examples follow.

EXAMPLE 1: This BASIC program statement uses the control code HEX(0A) to direct the printer to produce a stepped line of output:

```
Statement:  10 PRINT "ONE";HEX(0A):"TWO";HEX(0A);"THREE"

Output:     ONE
               TWO
                  THREE
```

EXAMPLE 2: This BASIC program uses the escape code sequence HEX(02070F) to direct the printer to print the characters DESELECT, then extinguish its SELECT lamp and go off line without performing a line feed:

```
Statement:  10 PRINT "DESELECT";HEX(02070F)

Output:     DESELECT
```

3.4 ESCAPE CODE SEQUENCES

Table 3-2 lists the escape code sequences for programmed printer applications. These escape codes are the only codes supported by the local printer.

Table 3-2. Printer Escape Code Sequences

Escape Code Sequence	Function
02 03 0F	CLEAR PLATEN
02 04 dd...0F	Defines meaning of isolated HEX(0E)
02 07 0F	DESELECT PRINTER
02 09 01 02 dd ee 0F	SET PITCH
02 0A 0E	SET AUTO LINE FEED AFTER CARRIAGE RETURN
02 0A 0F	DISABLE AUTO LINE FEED AFTER CARRIAGE RETURN
02 0A 01 02 dd ee 0E	SET LINE FEED SIZE AND SET AUTO LINE FEED AFTER CARRIAGE RETURN
02 0A 01 02 dd ee 0F	SET LINE FEED SIZE AND DISABLE AUTO LINE FEED AFTER CARRIAGE RETURN
02 0A dd 0F	EXECUTE PARTIAL LINE FEED (1/4, 1/2, 3/4, LF)
02 0C 01 cc dd...dd 0F	SET FORM LENGTH
02 0D 0C 03 0F	RESTORE POWER ON DEFAULTS

3.5 IMPLEMENTING ESCAPE CODE SEQUENCES

This section explains how you use the supported escape code sequences listed in Table 3-2. It also provides BASIC program examples. Spaces between individual codes are to facilitate reading.

1. CLEAR PLATEN: HEX(02 03 0F)

This sequence directs the printer to eject the paper off of the platen. In the case of a Wangwriter with a single sheet feeder, a new sheet feeds in front of the platen.

EXAMPLE

```
Statement:    10 PRINT HEX(02030F)
```

2. Define Meaning of Isolated HEX(0E) Code: HEX(02 04 xx yy zz ... 0E) or HEX(02 04 xx yy zz ... 0F)

The Wangwriter printer has two attributes, bold and underscore. Use this escape code sequence or the single-byte control code HEX(0E), which functions in conjunction with this escape sequence, to activate these attributes. A new attribute set is defined when the printer executes this sequence, and the previously defined attribute set is disabled.

Define the values for the parameters xx, yy and zz as follows (any other values for xx and yy, along with any values for zz, are ignored):

```
xx = 00 disables bold
     02 enables bold
     04 enables bold

yy = 00 disables underscore
     04 enables underscore
     0B enables underscore
```

You can terminate this sequence with either a HEX(0E) or a HEX(0F) code. These codes direct the printer when to activate the desired attribute, and when and how to deactivate it. The printer then prints the current line buffer contents.

a. If you terminate this sequence with a HEX(0E) code, the attribute is activated on the printer immediately. The attribute stays activated until any of the following events occur:

- An isolated HEX(0F) code
- Another HEX(02 04 xx yy zz 0E or 0F) sequence
- A HEX(02 0D 0C 03 0F) sequence (Reset Defaults)

b. If you terminate this sequence with a HEX(0F) code, the attribute is activated only when the printer receives an isolated HEX(0E) code. The printer turns off when it receives an isolated HEX(0F) or a HEX(0D) code (a carriage return), whichever occurs first. The specified meaning of HEX(0E) remains in effect until any of the following events occur:

- Another HEX(02 04 xx yy zz 0E or 0F) sequence
- A HEX(02 0D 0C 03 0F) sequence (Reset Defaults)

EXAMPLE 1: Define enhanced print as underscore. Turn on the attributes with HEX(0E) and turn off with HEX(0F) or carriage return.

Statement:
```
10 PRINT HEX(02040004000F)
20 PRINT "ABC"; HEX(0E); "XYZ"; HEX(0F); "123"
30 PRINT "ABC"; HEX(0E); "XYZ123"
40 PRINT HEX(0E); "ABCXYZ123"
```

Output:
```
ABCXYZ123
ABCXYZ123
ABCXYZ123
```

EXAMPLE 2: Define enhanced print as underscore. Turn on immediately and turn off with HEX(0F):

Statement:
```
10 PRINT HEX(02040000020E)
20 PRINT "ABC"
30 PRINT "XYZ"
40 PRINT "123"; HEX(0F)
50 PRINT "END OF TEST"
```

Output:
```
ABC
XYZ
123
END OF TEST
```

3. PRINTER DESELECT: HEX(02 07 0F)

This sequence directs the printer to follow the execution sequence, extinguish its SELECT lamp, and go off line.

4. SELECT PITCH: HEX(02 09 01 02 dd ee 0F)

The Wangwriter printer supports pitch values 10 and 12 only. Use this sequence to define pitch selection for the printer. dd ee equals a hexadecimal value that gives the integral and fractional pitch. The specified pitch remains selected until any of the following events occur:

- Another select pitch sequence
- A HEX(02 0D 0C 03 0F) sequence (Reset Defaults)

EXAMPLE

```
Statements:   10 PRINT HEX(020901020A000F)
              20 PRINT HEX(020901020C000F)
              30 PRINT HEX(0209010200000F)

Output:       Selects 10-pitch
              Selects 12-pitch
              Selects default (10-pitch)
```

5. SET AUTO LINE FEED AFTER CARRIAGE RETURN: HEX(02 0A 0E)

This sequence directs the printer to provide an automatic line feed after the execution of a HEX(0D) code (a carriage return). The printer defaults to this state when powered up.

6. DISABLE AUTO LINE FEED AFTER CARRIAGE RETURN: HEX(02 0A 0F)

This sequence directs the printer to disable an automatic line feed after the execution of a HEX(0D) code (a carriage return). The printer defaults to an automatic line feed when powered up.

7. SET LINE FEED SIZE AND SET AUTO LINE FEED AFTER CARRIAGE RETURN: HEX(02 0A 01 02 dd ee 0E)

dd= The hexadecimal value of the line feed spacing in 1/48 inch increments

ee = This value is ignored

EXAMPLE

```
Statements:   10 PRINT HEX(020A010206000E)
              20 PRINT HEX(020A010208000E)

Output:       Sets 8 lines per inch
              Sets 6 lines per inch
```

8. SET LINE FEED SIZE AND DISABLE AUTO LINE FEED AFTER CARRIAGE RETURN: HEX(02 0A 01 02 dd ee 0F)

See Numbers 6 and 7 above.

9. EXECUTE PARTIAL LINE FEED: HEX(02 0A dd 0F)

This sequence directs the printer to generate partial line feeds in increments of 1/4, 1/2, or 3/4 of the currently selected line feed increment. Byte dd indicates the fraction of the line feed.

dd = 00 for no line feed
02 for 1/4 of current line feed size
04 for 1/2 of current line feed size
08 for 3/4 of current line feed size

The partial line feed occurs immediately, without causing the contents of the buffer to print. When the printer executes a HEX(0A) or an automatic line feed, the paper advances to the start of the next whole line position.

EXAMPLE

Statements:

```
0010  SELECT PRINT 204
0020  PRINT "THE EQUATION FOR Z IS:"
0030  REM SUPPRESSES AUTO LINE FEED
   :  PRINT HEX(020A0F)
0040  REM PRINT SUPER SCRIPTS
   :  PRINT "     2   2"
0050  REM ADVANCE THREE QUARTERS OF A LINE
   :  PRINT HEX(020A040F)
0060  REM PRINT BASE LINE
   :  PRINT "Z + X  + Y  - 2*(X+Y)"
0070  REM ADVANCE THREE QUARTERS OF A LINE
   :  PRINT HEX(020A040F)
0080  REM PRINT SUBSCRIPTS
   :  PRINT "      3"
0090  REM ACTIVATE AUTO LINE FEED
   :  PRINT HEX(020A0E)
0100  REM MOVE TO NEXT FULL LINE POSITION
   :  PRINT
0110  REM PRINT NEXT LINE
   :  PRINT "TO CONTINUE WITH THIS LINE OF THOUGHT,"
```

Output:

THE EQUATION FOR Z IS:

$$Z = X_3^2 + Y^2 - 2*(X+Y)$$

TO CONTINUE WITH THIS LINE OF THOUGHT

10. SET FORM LENGTH: HEX(02 0C 01 cc dd ... dd 0F)

cc = the hexadecimal count of the bytes between cc and 0F exclusively

dd = the hexadecimal value of the form length in 1/48 inch printer increments

EXAMPLE

Statement: 10 PRINT HEX(020C010202100F)

11. RESTORE DEFAULTS: HEX(02 0D 0C 03 0F)

This sequence directs the printer to restore the power on default values for every feature that the host computer alters.

CHAPTER 4
THE DOCUMENT TRANSFER UTILITY

4.1 INTRODUCTION

The 2236WW terminal supports a Document Transfer utility using 2200 Word Processing. You can send a document from a 2200 library to a Wangwriter archive diskette or the reverse with this utility. The document remains on both the original system and the new system. The transfer process converts the general format and certain characteristics of the original document (such as underscore and subscripts) to match the new system. The longer the document, the more time the transfer takes.

You can only perform a document transfer from the Wangwriter 2236WW terminal. You can access the Document Transfer utility through the 2200 Advanced Functions menu. You must use a 2200 Word Processing Release 2.1 or greater to run the document transfer utility. Never run the Document Transfer utility while background printing a 2200 document to the attached Wangwriter terminal printer (printer 204). Background printing means you selected the Queue Print Request option to print a 2200 document.

In addition to this utility, you can run all 2200 Word Processing functions (refer to the 2200 Word Processing Operator's Manual).

4.2 DOCUMENT ATTRIBUTE DIFFERENCES

Seven individual character attributes are possible in both a Wangwriter and 2200 document: normal, underscore, double underscore, subscript, superscript, strikethrough, and bold. The 2200 and Wangwriter word processing systems do not support all attributes in the same way after transferring. This is important when you edit or print the transferred document.

Tables 4-1 and 4-2 show how document attributes are converted from the original system to the new system. Document attributes in the left column of Tables 4-1 and 4-2 refer to what exists on the original document. Document attributes in the right column refer to what happens to the attribute after it is transferred. Using "word" as an example, the parentheses next to each attribute contain the screen presentation of the attribute.

Table 4-1. Document Attributes: Transfer from 2200 to Wangwriter System

2200 Attribute	Wangwriter Attribute
normal (word)	normal (word)
underscore (word)	underscore (word)
double underscore (⊥word⊥)	normal (word)
superscript (word↑1↓)	superscript ($word^1$)
subscript (word↓1↑)	subscript ($word_1$)
strikethrough (⊥⊥word⊥⊥)	normal (word)
bold (⊺word⊺)	normal (word)

Table 4-2. Document Attributes: Transfer from Wangwriter to 2200 System

Wangwriter Attribute	2200 Attribute
normal (word)	normal (word)
underscore (word)	underscore (word)
double underscore (word)	underscore (word)
superscript ($word^1$)	superscript (word↑1↓)
subscript ($word_1$)	subscript (word↓1↑)
strikethrough (word)	normal (word)
bold (word)*	normal (word)

* Reverse Video

NOTE

For Tables 4-1 and 4-2, all attribute combinations are supported in the transferred document if the individual attribute is supported. For example, a 2200 attribute combination of a double underscore and a superscript (⊥word⌈1⌊⊥) is converted to the Wangwriter attribute of a underscore and a superscript (word[1]).

4.3 TRANSFER FROM THE 2200 TO THE WANGWRITER

The 2200 document you want to transfer cannot exceed 75 pages. This is the maximum page space available on a Wangwriter archive diskette. You can either use an already prepared diskette, if there are enough free pages available, or you can prepare a new diskette. Refer to The Wangwriter Reference Manual for instructions on archive diskette preparation.

If you transfer a 2200 document that is larger than the space available on the Wangwriter archive diskette, a partial document transfer is performed. In this case, use another prepared archive diskette and begin the transfer again: the Document Transfer utility can only start the transfer process from the beginning of a 2200 document. To delete a document from the Wangwriter archive diskette or to prepare another archive diskette, you must end the 2200 terminal emulation and return to Wangwriter Word Processing. (See Section 1.6 for information on how to end 2200 terminal emulation.)

To transfer a document from a 2200 WP library to a Wangwriter archive diskette, perform the following steps.

1. Place the prepared Wangwriter archive diskette into the Wangwriter diskette drive and latch the door (use the upper drive if it is a dual-diskette drive).

2. Position the Acceptance Block next to the Advanced Functions option on the Word Processing menu and press EXECUTE. The Advanced Functions menu appears on the screen.

3. Position the Acceptance Block at Convert WP Document to WANGWRITER and press EXECUTE. The screen in Figure 4-1 appears.

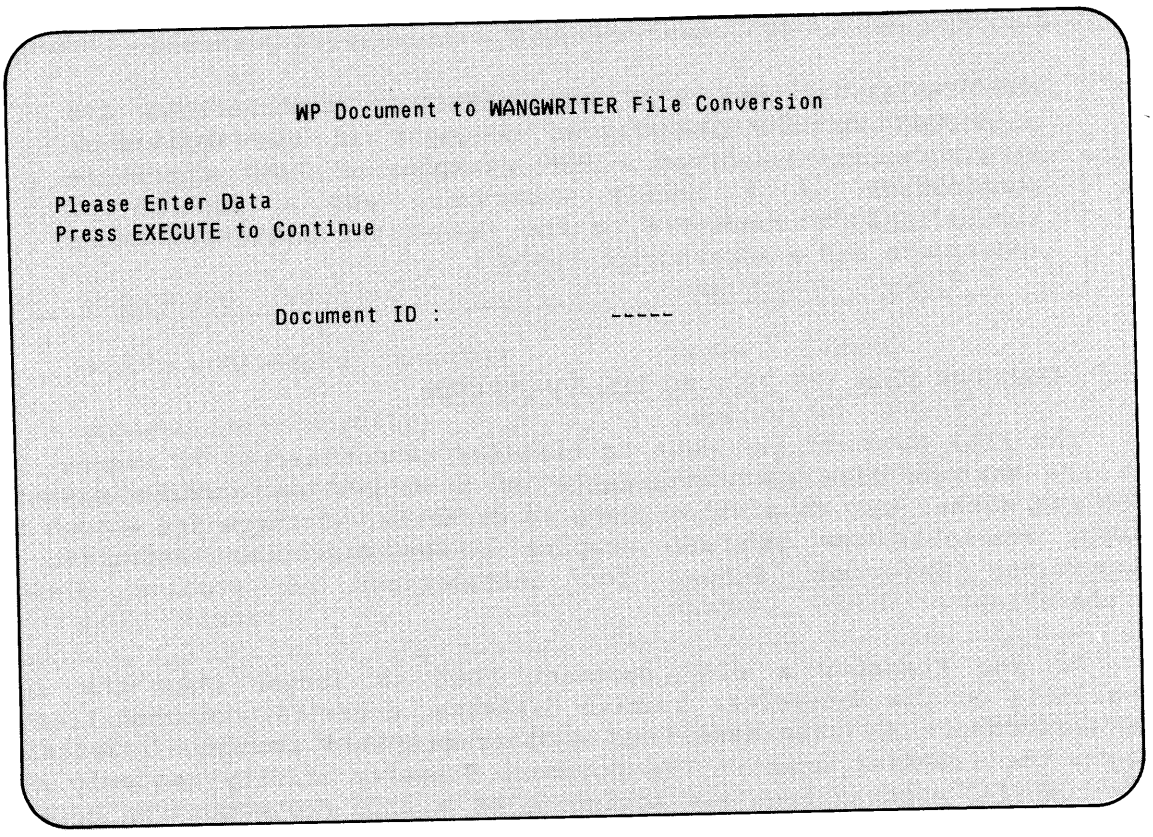

Figure 4-1. Convert WP Document to WANGWRITER, Screen 1

4. Enter the 2200 document ID that you want to transfer (this is a four-digit number with a library letter in the fifth space) in the Document ID field. The 2200 Document Summary information appears on the screen (see Figure 4-2).

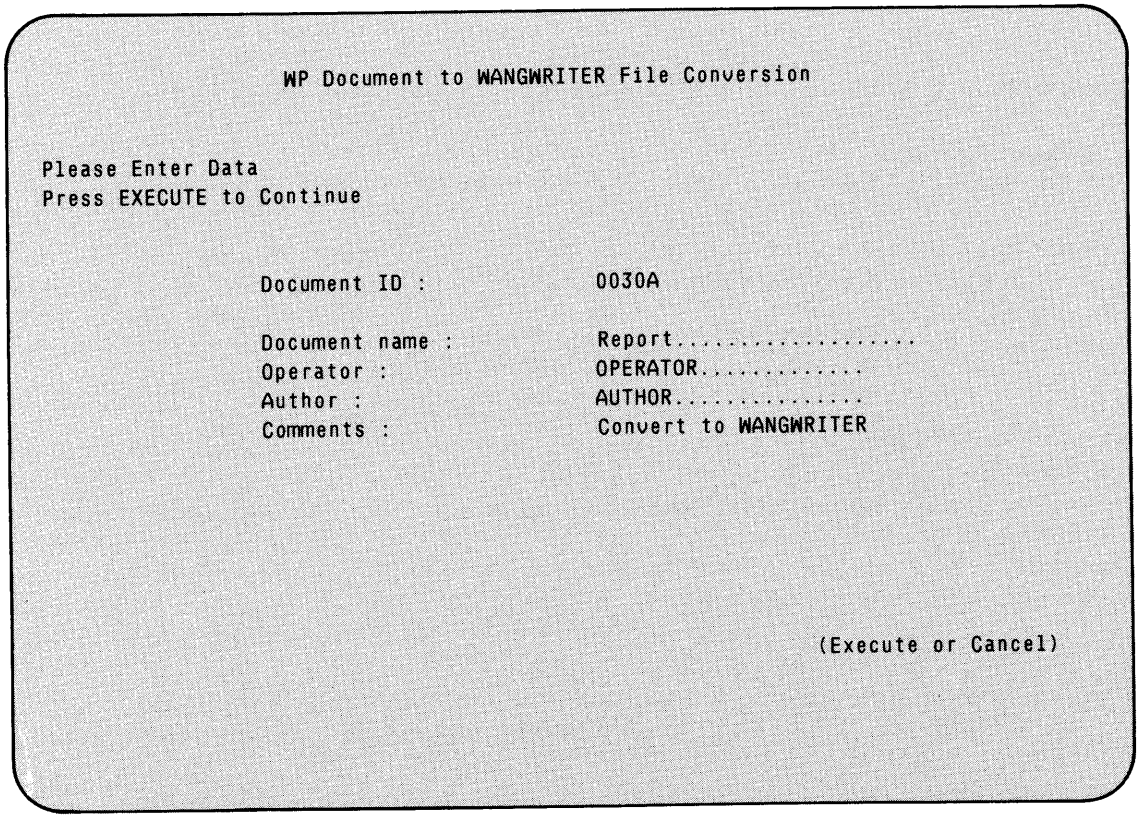

Figure 4-2. Convert WP Document to WANGWRITER, Screen 2

5. Check the Document Summary information for accuracy, then press EXECUTE. A new field appears on the screen (see Figure 4-3).

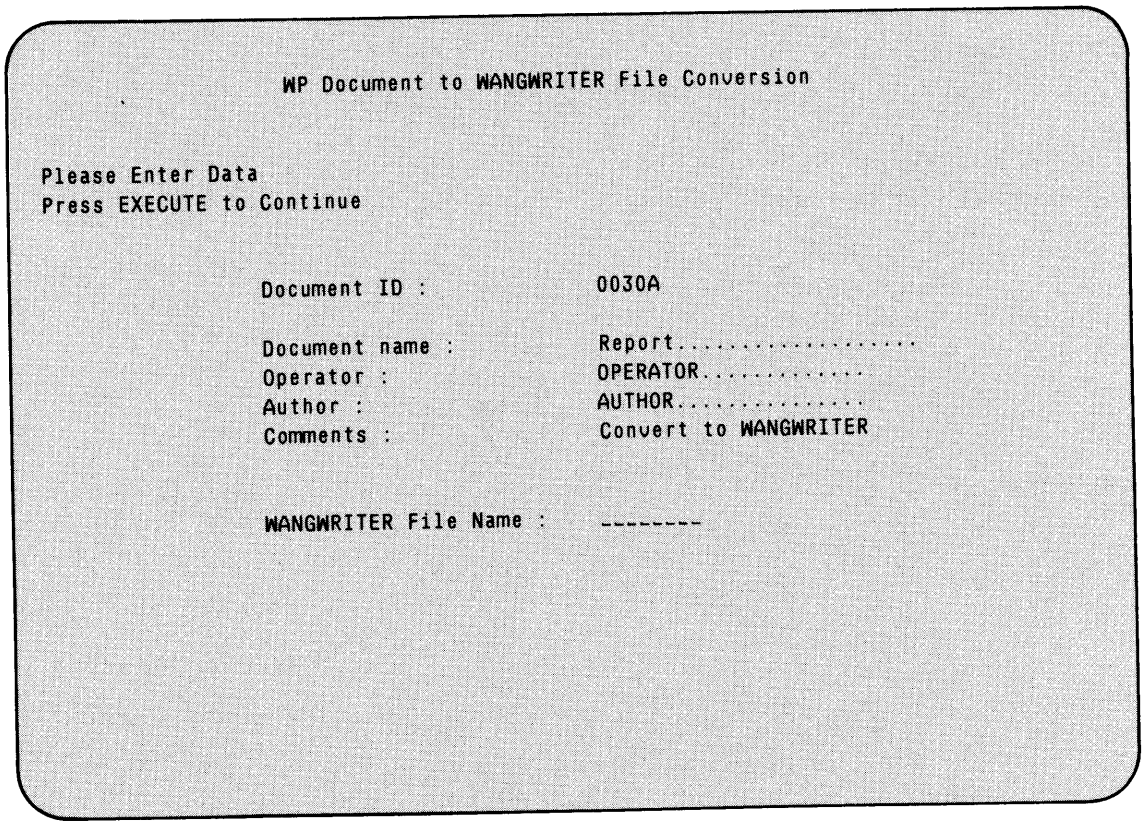

Figure 4-3. Convert WP Document to WANGWRITER, Screen 3

6. Enter a Wangwriter document name (a one-to eight-character name that contains only letters and/or numbers, in any combination) in the WANGWRITER File Name field. The name must be unique to the archive diskette.

   Once you begin the document transfer process, you cannot cancel it. This is the last chance to end the transfer. Press EXECUTE to begin the transfer.

CAUTION

Do not, under any circumstances, attempt to remove the archive diskette from the Wangwriter diskette drive until the red light on the drive goes out. Attempting to do so may damage the diskette drive and the archive diskette.

7. After the transfer is successfully completed, the screen in Figure 4-1 appears again. You can transfer another document or press CANCEL three times to return to the main menu.

Once a document is transferred to the Wangwriter archive diskette, you can perform all Wangwriter word processing functions. Check the document attributes (see Table 4-1) when you edit or print the document.

4.4 TRANSFER FROM THE WANGWRITER TO THE 2200

The number of pages available in the 2200 library you want to transfer a Wangwriter document to must be able to accommodate the number of document pages on the archive diskette. Check the volume space, using the Volume Capacity option on the 2200 Utilities menu, before you transfer the document.

If you transfer a Wangwriter document that is larger than the space available in the 2200 library, a partial document transfer is performed. In this case, delete the document from the 2200 library and perform the transfer process again to another library: the Document Transfer utility can only start the transfer process from the beginning of a Wangwriter document. Refer to the 2200 Word Processing Operator's Manual for instructions on how to delete a library document.

To transfer a document from a Wangwriter archive diskette to a 2200 library, perform the following steps:

1. Place the Wangwriter archive diskette that contains the document you want to transfer in the Wangwriter diskette drive (use the upper drive if it is a dual-diskette drive) and latch the door.

2. Position the Acceptance Block next to the Advanced Functions option on the Word Processing menu and press EXECUTE. The Advanced Functions menu appears on the screen.

3. Position the Acceptance Block at Convert from WANGWRITER Document to WP Document and press EXECUTE. The screen in Figure 4-4 appears.

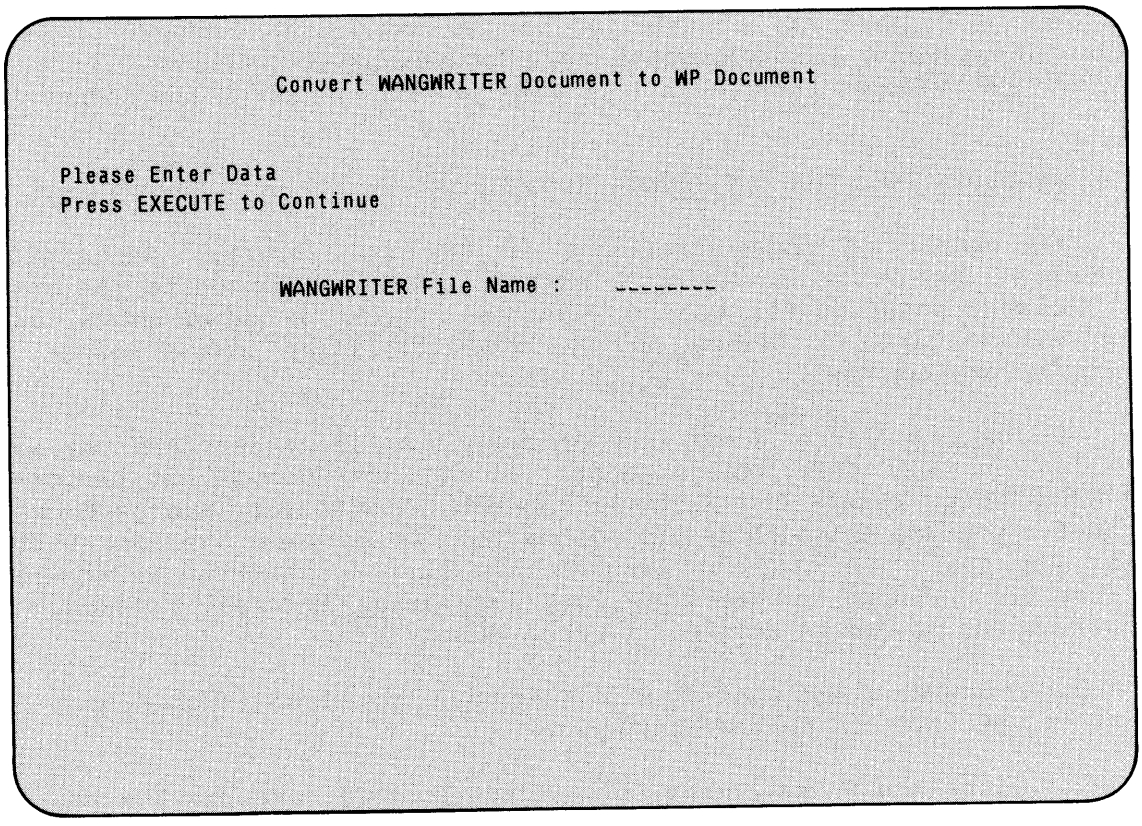

Figure 4-4. Convert from WANGWRITER Document to WP Document, Screen 1

4. Enter the correct Wangwriter document name (a one- to eight-character name using only letters and/or numbers, in any combination) in the WANGWRITER File Name field. Press EXECUTE. A new field appears on the screen (see Figure 4-5).

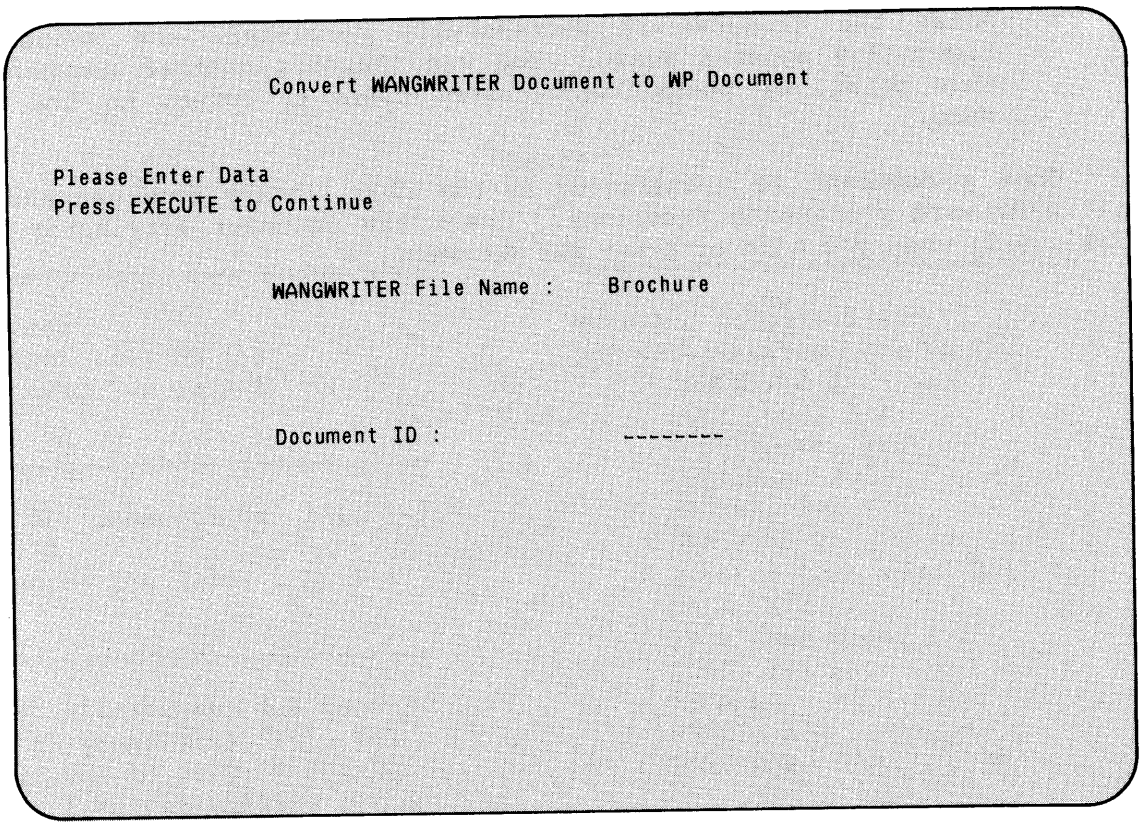

Figure 4-5. Convert from WANGWRITER Document to WP Document, Screen 2

5. Enter a 2200 document ID (a four-digit number with a library letter in the fifth space) in the Document ID field. This ID must be unique to the library.

   Once you begin the document transfer process, you cannot cancel it. This is the last chance to stop the transfer. Press EXECUTE to begin the transfer.

CAUTION

Do not, under any circumstances, attempt to remove the archive diskette from the Wangwriter diskette drive until the red light on the drive goes out. Attempting to do so may damage the diskette drive and the archive diskette.

6. After the transfer is successfully completed, the screen in Figure 4-4 appears again. You can transfer another document at this point, or press CANCEL three times to return to the main menu.

Once a document is transferred to the 2200 library, you can perform all 2200 word processing functions. Check the document attributes (see Table 4-2) when you edit or print the document.

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