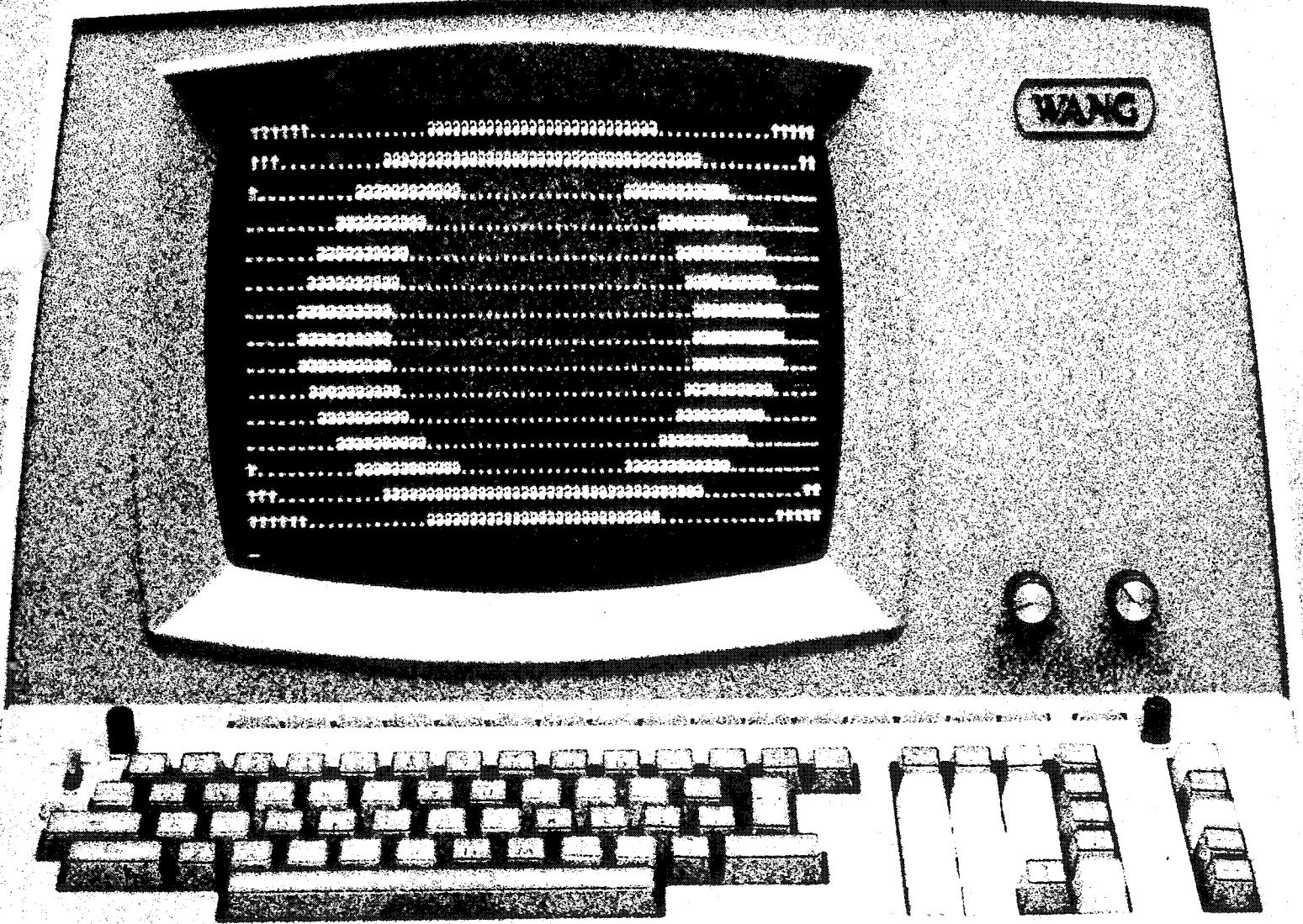


WANG

# MODEL 2271 PRINTER USER MANUAL

# SYSTEM 2200





•

•



•

•



# MODEL 2271 PRINTER USER MANUAL

© Wang Laboratories, Inc., 1977



LABORATORIES, INC.

ONE INDUSTRIAL AVENUE, LOWELL, MASSACHUSETTS 01851, TEL. (617) 851-4111, TWX 710 343-6769, TELEX 94-7421

## **Disclaimer of Warranties and Limitation of Liabilities**

The staff of Wang Laboratories, Inc., has taken due care in preparing this manual; however, nothing contained herein modifies or alters in any way the standard terms and conditions of the Wang purchase agreement, lease agreement, or rental agreement by which this equipment was acquired, nor increases in any way Wang's liability to the customer. In no event shall Wang Laboratories, Inc., or its subsidiaries be liable for incidental or consequential damages in connection with or arising from the use of this manual or any programs contained herein.



LABORATORIES, INC.

ONE INDUSTRIAL AVENUE, LOWELL, MASSACHUSETTS 01851, TEL. (617) 851-4111, TWX 710 343-6769, TELEX 94-7421

## HOW TO USE THIS MANUAL

This manual provides answers to questions concerning the operation of the Model 2271 Printer. It is designed for users who are already familiar with the available Wang System and its BASIC language.

For users who are not familiar with the operation of their system, it is recommended that the BASIC Programming Manual and the Wang BASIC Reference Manual be read before proceeding with this manual.

This manual has been divided into several chapters covering all the operational features of the Printer. Chapter 1 contains general information on the Printer. Chapter 2 describes device selection and the SELECT statement. Chapter 3 demonstrates how to format printed output and Chapter 4 describes the use of HEX codes. Hexadecimal codes, the Printer character set and specifications are collected in the Appendices.

# TABLE OF CONTENTS

	Page
CHAPTER 1: GENERAL INFORMATION	
1.1 Introduction . . . . .	1
1.2 Unpacking and Inspection . . . . .	2
1.3 Installation . . . . .	2
1.4 Paper Insertion . . . . .	2
1.5 Ribbon Replacement . . . . .	3
1.6 Typing Element Replacement/Insertion . . . . .	3
1.7 Fuse Replacement . . . . .	4
1.8 System Turn-On Procedure . . . . .	4
1.9 2271 Turn-On Procedure . . . . .	4
1.10 Forms Alignment . . . . .	6
1.11 Points to Be Checked . . . . .	7
CHAPTER 2: DEVICE SELECTION	
2.1 The SELECT Statement . . . . .	8
2.1.1 Device Type Codes . . . . .	9
2.1.2 Unit Address . . . . .	12
2.1.3 Line Length . . . . .	12
2.2 PRINT . . . . .	14
2.3 LIST . . . . .	16
2.4 CO (Console Output) . . . . .	17
2.5 Special Techniques . . . . .	17
2.6 Combined Parameters . . . . .	18
2.7 Deselecting the Model 2271 . . . . .	19
CHAPTER 3: FORMATTING OUTPUT	
3.1 PRINT, PRINTUSING and HEXPRINT Statements . . . . .	20
3.2 TABBING on the Model 2271 Printer . . . . .	23
CHAPTER 4: HEX CODES	
4.1 The HEX Function . . . . .	28
4.2 Control Codes . . . . .	28
APPENDICES	
Appendix A - Hexadecimal Codes . . . . .	34
Appendix B - Specifications . . . . .	35
INDEX . . . . .	36

# CHAPTER 1

## GENERAL INFORMATION

### 1.1 INTRODUCTION

This manual describes the characteristics and operations of the Model 2271 Printer (see Figure 1.1). The Model 2271 is a bidirectional, stepping motor-controlled character printer that interfaces directly with the standard CPU printer controller board. The printer generates output at 15 characters per second over a 149 column line in 12-pitch format or a 124 column line in 10-pitch format. The complete 96-character set for the printer is given in Appendix A. A full line character buffer receives data transmitted from the system CPU to the Printer. TAB, TAB Clear, SET TAB, BACKSPACE and UNDERSCORE operations are completely programmable for special formatting operations. Continuous-form paper of widths 3.5 to 15.5 inches (8.9 to 39.4 cm) can be used with the Printer.

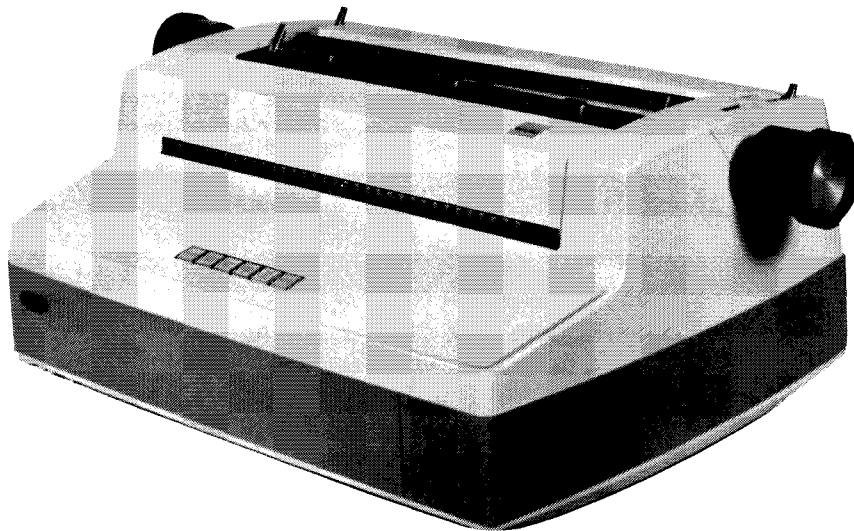


Figure 1.1 Model 2271 Printer

## 1.2 UNPACKING AND INSPECTION

When you receive your equipment, notify your Wang Service Representative; he should unpack and set up the Printer. Failure to notify a Wang Service Representative will void the warranty.

## 1.3 INSTALLATION

The installation of the printer involves the following:

1. The Printer Controller Board should be installed by a Wang Service Representative in the chassis of your system. Its screws should be fully tightened.
2. The 36-pin interface connector must be plugged into the Printer Controller Board and its Lock Clips placed in the up (locked) position. Note: The connector plugs directly into the printer slot in the PCS or 2200-WS.
3. The power cord from the Line Printer must be plugged into a wall outlet (see power requirements in Appendix B).

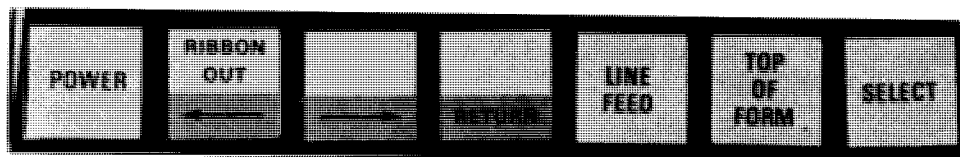


Figure 1.2 Control Panel

## 1.4 PAPER INSERTION

Paper is inserted in a manner similar to loading a standard typewriter.

1. Insert paper down behind the platen and roll the platen until the paper is around and up in front.



2. Use the paper bail to properly align the paper.
3. After the paper is positioned and the paper bail and paper release are returned to their operating positions, adjust the left hand platen adjust lever for the thickness of the form. For single sheet, the lever should be in the forward position. As paper thickness increases, move the lever rearward.

(See Section 1.10 for Forms Alignment.)

#### 1.5 CARTRIDGE RIBBON REPLACEMENT

1. Turn power OFF on the Printer.
2. Remove the cover of the printer and locate the cartridge ribbon on print carriage.
3. Remove the exposed ribbon from the around print element; rotate the cartridge spindle as required.
4. Remove the cartridge by grasping the sides and pulling it up from the print carriage.
5. Place the new cartridge in the printer; guide the exposed ribbon around the print element and snap the cartridge in place.
6. Replace the cover and turn power ON to resume operation.

#### 1.6 TYPING ELEMENT REPLACEMENT/INSERTION

On top of the Typing Element is a 10 or 12, indicating pitch. When using an Element with a 10, set the Pitch Selection Switch (located inside the front cover on the left side) to 10. When using a 12-pitch Element, set the Pitch Switch to 12.

To Replace the Element:

1. Lift the lever on top of the Element until it clicks to the open position.
2. Use the lever to lift the Element straight up off the post.

To Insert the new Element:

1. Open the lever on top of the new Element until you hear it click.
2. Holding the Element by the lever, place the Element in the post, pointing the triangle toward the platen.
3. Close the lever until it clicks in place.

**NOTE:**

The striking force of the Element is adjusted with the impression control knob located to the right of the Element post. There are three positions on the control: 1, 3, and 5. Set the control to 5 for a greater striking force and to 1 for less striking force. For most applications, the control should be set on 3.

**1.7 FUSE REPLACEMENT**

The fuse is located in the rear of the Printer. The fuse is changed by twisting the bad fuse out of the socket and replacing it with a new fuse. The Printer should be turned OFF when changing a fuse.

**1.8 SYSTEM TURN-ON PROCEDURE**

1. Verify that all power cords are connected to a source of electrical power and all peripheral cables are connected to your Wang system CPU.
2. Turn on all power switches. When the system is turned on, Master Initialization occurs, i.e., memory is cleared of all programs and variables and the addresses of primary devices are set to their default values.

Master Initialization automatically selects the CRT as the printing device. The device address for the Printer must be specified using a SELECT statement (see Chapter 2).

**1.9 2271 TURN-ON PROCEDURE**

The control panel on the front side of the printer contains a number of switches, buttons and light indicators for controlling the manual operations of the printer (see Figure 1.2).

**ON/OFF**

The ON/OFF switch is located at left side of the printer. To turn the printer ON, press the ON rocker switch. The Power lamp at the control panel is lit. To turn OFF the printer, press the OFF switch; the Power lamp is turned off.

## SELECT

After turning ON the printer, press the SELECT switch; the Select lamp is lit. SELECT places the printer in the ready condition to receive data from the CPU. When the SELECT switch is depressed again, the SELECT lamp is extinguished and the printer is temporarily deactivated (deselected). The SELECT switch can be used to halt printing temporarily (as when changing paper or ribbon) without causing loss of data in the print buffer; press SELECT to turn off the SELECT lamp to halt printing, insert paper and press SELECT again to resume printing.

## LINE FEED

Paper is advanced one line when this switch is depressed briefly; if the switch is held down, paper advances continuously. This switch operates only when the printer is in deselect mode (has not been SELECTED).

## TOP OF FORM

With the printer ON (but not SELECTED), paper is automatically advanced 11 inches to the Top of Form.

The printer's Top-Of-Form indicator is automatically reset whenever the printer power is turned on or when the RESET button on the 2200 keyboard is pressed. When inserting a new sheet of paper, it should be manually adjusted to its Top-Of-Form position. Press the RESET button or turn the printer off and then on to reset the Top-Of-Form indicator.

## PITCH


This slide switch located inside the front cover on the left side is used to select between 10-pitch (124 column line) or 12-pitch (149 column line) format. To select 10 characters per inch, set the switch to 10; to select 12 characters per inch, set the switch to 12.


### NOTE:


Use a 10-pitch Typing Element with the switch set to 10; likewise use a 12-pitch Typing Element with the switch set to 12.

## RIBBON OUT LAMP/ SWITCH

This lamp indicates that the ribbon cartridge should be changed. The printer should be deselected and a new ribbon cartridge installed. After the cartridge is changed printing is resumed by pressing the SELECT switch.

The  switch is used to move the print element to the left. When this switch is touched briefly, the print element carriage moves to the left in one character space increments. If the switch is held down, the carriage moves continuously to the left.

 SWITCH

The  switch is used to move the print element to the right. When this switch is touched briefly, the print element carriage moves to the right in one character space increments. If the switch is held down, the carriage moves continuously to the right.

#### AUDIO ALARM

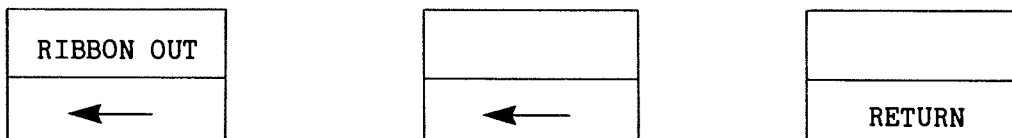
If paper runs out while the printer is being used, the System ceases operation, and an audible one-second tone is sounded. The audio alarm is also sounded for a ribbon out condition or a hardware malfunction. The printer should be deselected before attempting to correct any printer malfunctions. The audio alarm can also be programmed to sound using a HEX(07) code (see Section 4.2).

#### RETURN

When this switch is depressed, the print element carriage is automatically returned to the left margin.

### 1.10 FORMS ALIGNMENT

The Model 2271 Printer is provided with three switches which simplify the task of aligning the print element with a preprinted form. These switches are located on the control panel and are labeled as follows:



The switches cause the following action:

1. When either the left or the right arrow switch is pressed briefly, the print element carriage moves in increments of one character space either to the left or the right. If either switch is held down, the carriage moves continuously either to the left or to the right.
2. When the RETURN switch is pressed, the print element is moved quickly to the left margin.

These switches are not operational when the printer is accepting data from the 2200 computer, or when the printer is in the process of outputting a line. The switches can only be used when the printer is in an idle state (either selected or deselected).

When using forms which have preprinted lines beginning a significant distance away from the left margin, the following steps may be used to align the print element with the line on the form:

1. Insert the form and turn the printer ON.
2. Depress either the left or right arrow switches to move the print element over to the line.
3. Vertically align the print element with the line by using the platen knob on either side of the printer. Turn the platen knob to bring the line in alignment with the print element.
4. The RETURN switch may be used to return the print element to the left margin.

1.11 POINTS TO BE CHECKED

1. The Printer must be connected to its Controller Board.
2. The Printer must be plugged into a source of electrical power.
3. Paper must be inserted in the Printer.
4. The setting of the Pitch switch must correspond to the character element in use.
5. Turn on the Printer and the Wang system.
6. Depress the SELECT switch to enable the printer to receive data.
7. The Line Printer is now ready to use.

## CHAPTER 2 DEVICE SELECTION

### 2.1 THE SELECT STATEMENT

The SELECT statement must be used to select the Printer as the output device. A SELECT statement can be used either in the Immediate Mode or as a statement within a program. When used with the Model 2271, the syntax of the SELECT statement requires that it contain the BASIC verb PRINT, LIST or CO, a Device Type and Unit Address code. Line length can also be specified. Each of these SELECT parameters is described below.

Example:

```
:100 SELECT PRINT 215 (124)
Device Type  _____▲
Unit Address _____▲
Line Length  _____▲
```

If Line Length is not specified in a SELECT PRINT, SELECT LIST or SELECT CO statement, then the line length defaults to 64, the standard width of the CRT. In a system with an 80 column CRT, the line length is set to 80.

Example:

```
:SELECT PRINT 215
:10 PRINT "THE MODEL 2271 PRINTER PRINTS BIDIRECTIONALLY
      124 CHARACTERS ON A FULL LINE WHEN 10-PITCH IS SELECTED
      AND 149 CHARACTERS ON A FULL LINE WHEN 12-PITCH IS
      SELECTED."
:RUN (EXECUTE)
```

Output:

```
THE MODEL 2271 PRINTER PRINTS BIDIRECTIONALLY 124 CHARACTERS ON
A FULL LINE WHEN 10-PITCH IS SELECTED AND 149 CHARACTERS ON A FU
LL LINE WHEN 12-PITCH IS SELECTED.
```

### 2.1.1 Device Type Codes

Every peripheral attached to your Wang System is assigned a three-character Device Selection Code. The Device Selection Code is in the form (xyy), where x is the Device Type and yy is the Unit Address. The Device Type (x) determines which internal system I/O routines are used to control the Printer. The Model 2271 automatically executes a line feed (i.e., advances the paper to a new line) following the execution of a carriage return; it is thus usually selected with a device type of 2 (see device types below). Generally, carriage return commands are initiated from the Wang system CPU. The printer, however, automatically prints characters in the buffer and executes a carriage return at the end of a full character line.

Type

Operation

- 0 This Device Type addresses devices that do not automatically execute a line feed after a carriage return; therefore, with this Device Type, your Wang system CPU supplies a line feed after each system-generated carriage return. When this Device Type is selected for the Model 2271 PRINT operations output which is normally single spaced is double spaced.

Example:

```
:SELECT PRINT 015 (80)
:10 FOR I=1 TO 5
:20 PRINT "AABBCCDDEEFFGGHHIIJJKLLMMNNOOPPQQRRSSTTUUVVWW"
:30 NEXT I
:RUN (EXECUTE)
```

Output:

```
AABBCCDDEEFFGGHHIIJJKLLMMNNOOPPQQRRSSTTUUVVWW
AABBCCDDEEFFGGHHIIJJKLLMMNNOOPPQQRRSSTTUUVVWW
AABBCCDDEEFFGGHHIIJJKLLMMNNOOPPQQRRSSTTUUVVWW
AABBCCDDEEFFGGHHIIJJKLLMMNNOOPPQQRRSSTTUUVVWW
AABBCCDDEEFFGGHHIIJJKLLMMNNOOPPQQRRSSTTUUVVWW
```

- 2 This Device Type addresses devices that automatically execute a line feed after a carriage return; it is the Device Type normally used with the Printer for PRINT and CO operations. With this Device Type, output is single spaced.





Example 2:

```
:10 SELECT PRINT 415
:20 FOR I=1 TO 3
:30 PRINT "AABBCCDDEEFFGGHHIIJJKLLMM
      NNOOPPQRRSSTTAABBCCDDEEFFGGHHIIJJ
      KKLLMMNNOOPPQRRSSTTAABBCCDDEEFFGG
      HHIIJJKLLMMNNOOPPQRRSSTTAABBCC
      DDEEFFGGHHIIJJKLLMMNNOOPPQRRSS
      TT"
:40 NEXT I
:50 PRINT HEX(OD)
:RUN (EXECUTE)
```

Output:

```
AABBCCDDEEFFGGHHIIJJKLLMMNNOOPPQRRSSTTAABBCCDDEEFFGGHHIIJJKLLMMNNOOPPQRRSSTTAABB
CCDDEEFFGGHHIIJJKLLMMNNOOPPQRRSSTT
AABBCCDDEEFFGGHHIIJJKLLMMNNOOPPQRRSSTTAABBCCDDEEFFGGHHIIJJKLLMMNNOOPPQRRSSTTAABB
CCDDEEFFGGHHIIJJKLLMMNNOOPPQRRSSTT
AABBCCDDEEFFGGHHIIJJKLLMMNNOOPPQRRSSTTAABBCCDDEEFFGGHHIIJJKLLMMNNOOPPQRRSSTTAABB
CCDDEEFFGGHHIIJJKLLMMNNOOPPQRRSSTT
```

Example 3:

```
:10 SELECT PRINT 415 (124)
:20 FOR I=1 TO 5
:30 PRINT "AABBCC"
:40 PRINT HEX(OD)
:50 NEXT I
:RUN (EXECUTE)
```

Output:

```
AABBCC
AABBCC
AABBCC
AABBCC
AABBCC
```

### 2.1.2 Unit Address

The device address (yy) of the Model 2271 Printer Controller in your system CPU is preset to 15 by Wang Laboratories before the unit is shipped, and must be the address used in SELECT statements dealing with the Printer. If a second Wang printer is used on the same CPU, it is assigned device address 16 by the Wang Service Representative who installs your system.

### 2.1.3 Line Length

Line Length is a CPU system parameter which specifies the number of characters to be sent out to the printer before the system automatically sends out a carriage return and resets the internal line count. Line Length is normally used to accommodate paper of different widths. The maximum number of characters per line that can be printed in the Model 2271 is either 124 or 149 characters depending on pitch selection. In the SELECT statement line length is indicated in the parentheses following the Device Selection Code. For example:

SELECT PRINT 215 (80)	(Selects the Model 2271 for printing and sets line length to 80.)
SELECT CO 215 (64)	(Selects the Model 2271 for console output and sets line length to 64.)
SELECT LIST 215 (140)	(Selects the Model 2271 for listing a program and sets line length to 140.)

If a line length is not specified for PRINT, LIST or CO, the last line lengths selected for these operations are used. Note: The default line length set during Master Initialization is 64 characters (80 characters with an 80 column CRT). The maximum line length which can be specified in a SELECT statement is 255. However, the use of a line length greater than physical limitations of the printer is not recommended. A shorter line length causes a carriage return to be sent out when the line count is exceeded. A longer line count typically produces two carriage returns; one done automatically by the printer when a full line of characters have been printed, another sent out by the system when the line count specified in the SELECT PRINT statement is exceeded.

Example 1:

```
:5  REM EXAMPLE OF USING A LINE LENGTH LESS THAN THE NUMBER OF
    CHARACTERS IN THE PRINT ELEMENT
:10 SELECT PRINT 215 (5)
:20 PRINT "THE MODEL 2271 PRINTS UP TO 149 CHARACTERS PER LINE"
:RUN (EXECUTE)
```

Output:

```
THE M
ODEL
2271
PRINT
S UP
TO 14
9 CHA
RACTE
RS PE
R LIN
E
```

Note that embedded spaces in the line are included in the line count.

Example 2:

```
:10 REM EXAMPLE OF USING A LINE LENGTH GREATER THAN 149
:20 SELECT PRINT 215 (160)
:30 PRINT "THIS LINE INCLUDING SPACES HAS 175 CHARACTERS;
    THEREFORE SINCE IT IS LONGER THAN THE LINE LENGTH OF 160
    (GREATER THAN 149) SPECIFIED IN LINE 20 IT WILL PRINT
    OUT IN THREE LINES."
:RUN (EXECUTE)
```

Output:

```
THIS LINE INCLUDING SPACES HAS 175 CHARACTERS; THEREFORE SINCE IT IS LONGER THAN THE LINE LENGTH OF 160 (GREATER THAN 149) S
PECIFIED IN LINE 20 IT WILL PRINT OU
T IN THREE LINES.
```

The Printer does not print each character as it is received from the CPU. The Printer has a buffer for storing each character until the CPU directs it to print a line. The signal from the CPU to print a line is a carriage return code.

The line length setting is used by your Wang system to generate an automatic carriage return when a line exceeds the specified line length and when no carriage return is supplied by the program. As a line of output is printed on the Model 2271 the CPU keeps a count of the number of characters sent (line count). If this line count equals the current value of the line length before the output line is complete, a carriage return is transmitted to the printer, the line count is reset to zero, and the unfinished output is continued on the next line. If the output is completed and a carriage return is transmitted before the line count equals the line length, the system automatically resets the line count to zero for the start of a new line (a PRINT statement with no trailing comma or semicolon causes a carriage return to be executed at the end of the output). The line count is reset to zero under any one of the following conditions:

1. The line count equals the line length.
2. A carriage return is output when a PRINT, PRINTUSING or HEXPRINT statement is executed.
3. The system is RESET.
4. A CLEAR command is executed.
5. The system is Master Initialized.
6. Whenever a SELECT PRINT statement is executed.

## 2.2 PRINT

```
:SELECT PRINT 215 (124)
```

This statement selects the Printer with Device Type Code 215 for all program output resulting from the execution of PRINT, PRINTUSING or HEXPRINT statements. Printout resulting from PRINT and HEX PRINT statements entered in the Immediate Mode appear on the CRT unless the Printer is selected for CO (see SELECT CO 215).

### NOTE:

When the system is first turned on, PRINT operations are SELECTED to the CRT, the primary device for such operations. Therefore, it is necessary to execute a SELECT statement in the program to direct the output of PRINT statements to the Printer. Also the Printer SELECT switch must be depressed and the SELECT lamp lit.

Example:

```
:10 SELECT PRINT 215 (124) or :SELECT PRINT 215 (124)
:20 PRINT "N", "2 to the Nth" :20 PRINT "N", "2 to the Nth"
:25 PRINT :25 PRINT
:30 FOR X=0 TO 8 :30 FOR X=0 TO 8
:40 PRINT X, 2 ^ X :40 PRINT X, 2 ^ X
:50 NEXT X :50 NEXT X
```

When either of these programs is executed, the printer output is:

N	2 to the Nth
0	1
1	2
2	4
3	8
4	16
5	32
6	64
7	128
8	256

Example:

```
:10 SELECT PRINT 215 (149)
:20 X=7:Y=2.0:Z=5
:30 PRINT USING 40, X;Y;Z
:40 % ##.##
:RUN (EXECUTE)
```

Output:

7.0 2.0 5.0

Example:

```
:10 SELECT PRINT 215 (40)
:20 A$ = "THE 2271 PRINTER"
:30 HEXPRINT A$
:RUN (EXECUTE)
```

Output:

544845203232373120505249E54452

## 2.3 LIST

```
:SELECT LIST 215
```

This statement selects the Printer with Device Type Code 215 for all LIST operations.

**NOTE:**

The default address for LIST operations is 005, the CRT.

Example:

```
:SELECT LIST 215
:5 DIM A$18
:10 REM AN EXAMPLE USING THE PRINTER FOR LISTING
:100 A$ = "MODEL 2271 PRINTER"
:999 PRINT A$
:8900 END
:LIST (EXEC)
```

Output:

```
5 DIM A$18
10 REM AN EXAMPLE USING THE PRINTER FOR LISTING
100 A$ = "MODEL 2271 PRINTER"
999 PRINT A$
8900 END
```

Output from the Disk Catalogue Index can also be listed on the printer.

Example:

```
:SELECT LIST 215
:LIST DCF
```

## 2.4 CO (CONSOLE OUTPUT)

```
:SELECT CO 215 (40)
```

This statement selects the Printer with Device Type Code 215 and line length of 40 for all console output. This includes all system displays, such as the READY message, output from STOP and END statements, any data keyed in on the keyboard and entered into the CPU, and all output from Immediate Mode operations, TRACE statements, and error messages.

Example:

Key in as an Immediate Mode statement SELECT CO 215 (40), touch the RETURN/EXECUTE Key and touch the RESET key. The output on the printer is:

```
:READY
```

All information entered into the CPU via the keyboard is now printed on the Printer.

## 2.5 SPECIAL TECHNIQUES

The normal Device Type used with the Model 2271 is type 2. When the Printer is selected with Device type 2 for LIST, PRINT, or CO, single spaced output is produced. Device Type 0 can also be used with the Model 2271 to produce double spaced output for LIST, PRINT, or CO operations. With Device Type 0, both the CPU and the Printer execute line feed commands following each system-generated carriage return.

Example 1:

```
:10 REM LISTING A PROGRAM WITH DEVICE TYPE 0
:20 DIM A(25), B(25)
:30 PRINT "PASCAL'S TRIANGLE"
:40 B(1)=1:FOR I=2 TO 21:FOR J=2 TO I:
    A(J)=B(J)+B(J-1):PRINT TAB(7*J-20);
    A(J);:NEXT J: FOR J=1 TO I:B(J)=A(J):
    NEXT J:PRINT:
    NEXT I:REM THIS ENDS THE CALCULATIONS, RETURN TO PART 5
:50 END
:SELECT LIST 015 (124)
:LIST (EXEC)
```

Output:

```
10 REM LISTING A PRTOGRAM WITH DEVICE TYPE 0
20 DIM A(25),B(25)
30 PRINT "PASCAL'S TRIANGLE"
40 B(1)=1:FOR I=2 TO 21:FOR J=2 TO I:A(J)=B(J)+B(J-1):PRINT TAB(7*J-20);A(J);:NEXT J: FOR J=1 TO I:B(J)=A(J):NEXT J:PRINT :N
EXT I:REM THIS ENDS THE CALCULATIONS, RETURN TO PART 5
50 END
```

Device Type 4 is intended for use with Wang plotter peripherals and has limited application with other types of devices. It can be used with the Model 2271 Printer in the production of special double spaced program listings. When LISTing a program with Device Type 4, a program statement which overlaps onto more than one print line is single spaced; however, each new program statement is double spaced. The overall effect is a more readable double spaced program listing. If Example 1 is listed with

```
:SELECT LIST 415(124)
:LIST (EXEC)
```

then the output is:

```
10 REM LISTING A PROGRAM WITH DEVICE TYPE 4
20 DIM A(25),B(25)
30 PRINT "PASCAL'S TRIANGLE"
40 B(1)=1:FOR I=2 TO 21:FOR J=2 TO I:A(J)=B(J)+B(J-1):PRINT TAB(7*J-20);A(J);:NEXT J: FOR J=1 TO I:B(J)=A(J):NEXT J:PRINT :N
EXT I:REM THIS ENDS THE CALCULATIONS, RETURN TO PART 5
50 END
```

In summary, it is recommended that the Model 2271 normally be selected with Device Type 2 for LIST, PRINT, or CO operations. Device Type 4 should only be used for LISTing a program.

## 2.6 COMBINED PARAMETERS

It is possible to combine parameters in a SELECT statement.

Example:

```
SELECT PRINT 215 (100), LIST 215(80), CO 215 (112)
```

However, it is not possible to select two output devices with the same parameter.

For example, the statement

```
SELECT LIST 215, LIST 005
```

produces listing of programs on the CRT only.



## 2.7 DESELECTING THE MODEL 2271

To deselect the Printer, use one of the following methods:

1. Select another device for PRINT, LIST or CO by using the SELECT statement.
2. Master Initialize (turn Power Supply OFF, then ON). Master Initialization selects the CRT for all LIST, PRINT and CO operations.
3. Key in CLEAR and touch the RETURN/EXECUTE key. PRINT and LIST operations are returned to the device currently selected for Console Output (CO). If the Printer is currently the CO device, either method 1 or 2 must be used to deselect it.
4. Turn off the SELECT lamp.

## CHAPTER 3

### FORMATTING OUTPUT

#### 3.1 PRINT, PRINTUSING AND HEXPRINT STATEMENTS

The PRINT, PRINTUSING and HEXPRINT statements are used with the Line Printer in the same manner as they are used with the CRT, although more print zones of 16 characters each are available on the printer than on the CRT.

When 10-pitch is selected the Model 2271 has a line length of 124 characters, divided into seven zones of 16 characters each and one zone of 12 characters. The zones constitute columns 0-15, 16-31, 32-47, 48-63, 64-79, 80-95, 96-111, and 112-123 respectively.

When 12-pitch is selected, the Model 2271 has a line length of 149 characters, divided into nine zones of 16 characters each and one zone of 5 characters. The zones constitute columns 0-15, 16-31, 32-47, 48-63, 64-79, 80-95, 96-111, 112-127, 128-143, and 144 - 148 respectively.

If commas separate elements in a PRINT statement, then each element begins at the start of a new zone. If semicolons separate elements in a PRINT statement, the output appears in packed format, with no spaces between items. (See the Wang BASIC Reference Manual for a discussion of zoned and packed format.)

Example 1:

```
:10 REM PRINTING IN ZONED FORMAT WITH COMMAS
:20 SELECT PRINT 215 (124)
:30 PRINT "COLUMNS 0-15", "COLUMNS 16-31", "COLUMNS 32-47"
:RUN (EXECUTE)
```

Output:

```
COLUMNS 0-15    COLUMNS 16-31    COLUMNS 32-47
```

Example 2:

```
:10 REM SKIPPING OVER ZONES WITH COMMAS
:20 SELECT PRINT 215 (149)
:30 PRINT "ACCOUNT NO.",,, "BALANCE DUE"
:40 PRINT "(COLUMNS 0-15)",,, "(COLUMNS 48-63)"
:50 PRINT 10082,, ,153.19
:RUN (EXECUTE)
```

Output:

ACCOUNT NO. (COLUMNS 0-15)	BALANCE DUE (COLUMNS 48-63)
10082	153.19

Example 3:

```
:10 REM PRINTING IN PACKED FORMAT WITH SEMICOLONS
:20 SELECT PRINT 215 (124): DIM A$ 18
:30 A$= "4-BEDROOM SALT BOX": P$= "$53,000"
:40 PRINT "STYLE:"; A$; " PRICE:"; P$
:RUN (EXECUTE)
```

Output:

STYLE:4-BEDROOM SALT BOX PRICE:\$53,000

Example 4:

```
:10 REM FORMATTING WITH PRINT USING STATEMENT
:20 SELECT PRINT 215 (149): DIM A$ 18
:30 A$= "4-BEDROOM SALT BOX": P=53000
:40 PRINT USING 50, A$, P
:50 % STYLE ##### PRICE-###,###
:RUN (EXECUTE)
```

Output:

STYLE 4-BEDROOM SALT BOX PRICE-\$53,000

Example 5:

```
:10 REM PRINTING WITH HEXPRINT STATEMENT
:20 SELECT PRINT 215 (149)
:30 A$="ABC DEF GHI JKL"
:40 HEXPRINT A$
:RUN (EXECUTE)
```

Output:

4142432044454620474849204A4B4C20

NOTE:

In zone printing on the Model 2271, it is important to make sure that information supplied to the last zone does not exceed the legal length of the last zone (either 5 or 12 characters long depending on pitch selection). For instance, in a 10 pitch format, if the information for the last zone exceeds 12 columns then that zone is omitted and the information is presented in the first zone of the next line.

Example:

```
:10 SELECT PRINT 215 (124)
:20 PRINT "NO.",1.2,3.4,5.6,7.8,9.0,8.4,"BALANCE DUE NOW"
```

Output:

```
NO.    1.2    3.4    5.6    7.8    9.0    8.4
BALANCE DUE NOW
```

In the above example the 8th element in line 20 exceeded 4 characters in length and thus was printed in the next line.

### 3.2 TABBING ON THE MODEL 2271 PRINTER

Tabbing on the Model 2271 Printer can be performed in three ways:

- 1 - PRINTUSING Statement
- 2 - TAB( function
- 3 - TAB HEX Codes.

#### PRINTUSING Statement

When it is desired to print columns of information across a line, the PRINTUSING statement can be used to specify the print format.

Example:

```
100 SELECT PRINT 215 (149)
110 DATA LOAD A1, B1, C1, D1
120 IF END THEN 150
130 PRINTUSING 140, A1, B1, C1, D1
140% ##### STYLE NO. ##### SIZE ## COLOR ###
150 GO TO 110
160 END
```

#### The TAB( Function

The TAB( function is used in the same manner with the Printer as it is used with the CRT. When a PRINT statement containing a TAB( function is executed, the Model 2271 prints at the column specified by the integer portion of the TAB( expression.

Example:

```
:SELECT PRINT 215(149)
:10 PRINT TAB(75);"MASTER SEWERAGE PLAN"
:20 PRINT: PRINT
:30 PRINT TAB(40);"STREET";TAB(70);"LINE FEET";
    TAB(110);"PIPE DIA.";TAB(130);"CONNECTIONS"
:RUN (EXECUTE)
```

Output:

```
                                MASTER SEWERAGE PLAN

STREET                LINE FEET                PIPE DIA.                CONNECTIONS
```

In the above example "MASTER SEWERAGE PLAN" is printed starting at column 75; likewise, the headings in line 30 are printed at the specified TAB settings.

If the value of TAB( expression is greater than the selected line length, the Printer moves to the next line and completes the PRINT statement starting at column 0.

Example:

```
:10 SELECT PRINT 215
:20 A=25
:30 PRINT TAB(A);"TANK MODEL";TAB(3*A);"CREW SIZE"
RUN (EXECUTE)
```

Output:

```
                TANK MODEL
CREW SIZE
```

NOTE:

If the carriage position in the line being printed is greater than the TAB( argument, the TAB is ignored. For example, in the following statement

```
10 PRINT "123456789"; TAB(5); "No."
the TAB(5) is ignored.
```

When using the TAB( function to print numeric values, an additional column (to the left of the value) is allocated for the sign (+ or -). If not used (for positive numbers), actual printing begins at the column specified plus one.

Example:

```
:10 SELECT PRINT 215 (80)
:20 PRINT TAB(10);"POWER";TAB(20);"VALUE"
:30 FOR N=-1 TO 10
:40 PRINT TAB(10);N;TAB(20);(-2)↑N
:50 NEXT N
:RUN (EXECUTE)
```

Output:

POWER	VALUE
-1	-.5
0	1
1	-2
2	4
3	-8
4	16
5	-32
6	64
7	-128
8	256
9	-512
10	1024

## TAB HEX Codes

It can at times be more convenient to establish tab settings and then to simply tab to the preset locations in a PRINT statement (similar to using the mechanical tabs on a typewriter). To accomplish this, three codes are available on the Model 2271 Printer:

```
SET TAB    -  HEX(1A)
TAB        -  HEX(09)
CLEAR TAB  -  HEX(19)
```

The set TAB code (HEX(1A)) is used to set a tab in the printer's internal tab buffer. Before setting a tab, the printer's internal line buffer pointer must be set to the correct location in the line. The TAB( function may be used to accomplish this.

Example:

```
10 SELECT PRINT 215(124)
20 PRINT TAB(10); HEX(1A)
```

Statement 20 sets a tab at column 10 of the print line.

Care must be taken when using the TAB( function to set multiple tabs on the printer. Since the SET TAB code (HEX(1A)) does not begin with a zero hex digit, it causes the 2200 CPU's internal line count to be incremented by one each time it is executed. To compensate for this, the succeeding TAB( function arguments must all be incremented as well.

Example:

```
10 SELECT PRINT 215(124)
20 PRINT TAB(10); HEX(1A); TAB(21); HEX(1A); TAB(102); HEX(1A)
```

Statement 20 sets tabs at columns 10, 20 and 100.

If tabs are to be set near the end of the print line, it is generally advisable to select a line length greater than 124 (10-Pitch) or 149 (12-Pitch). Otherwise the TAB( argument may become greater than the actual length and cause an unwanted carriage return code zero(0D) to be executed by the 2200 CPU.

Example:

```
10 SELECT PRINT 215(255)
20 FOR I = 10 TO 130 STEP 10
30 PRINT TAB(I + K); HEX(1A);
40 K = K + 1
50 NEXT I
```

This routine sets tabs at columns 10, 20, 30, 40, 50, ..., 120, 130 of the print line, although the TAB( function arguments are 10, 21, 32, 43, 54, ...131, 142.

Once tabs have been set by a SET TAB command, the TAB code (HEX(09)) causes the next item to be printed starting with the next tab location. Since the TAB code begins with a zero digit, it has no effect on the internal line count kept by the 2200 CPU.

Example:

```
20 PRINT HEX(09); "PART NO."; HEX(09); "PRICE"
```

This statement causes PART NO. to be printed starting with the first tab location, and PRICE starting with the second tab location.

```
20 PRINT TAB(09); X(I); TAB(0909); Y(I)
```

This statement prints X(I) at the first tab location and Y(I) at the third location.

The CLEAR TAB command (HEX(19)) is used to remove a tab from the printer's internal tab buffer. To remove a preset tab, the printer must be positioned internally at the tab location. This may be done by using the TAB function.

Example:

```
10 SELECT PRINT 215(132)
15 PRINT TAB(10); HEX(1A); TAB(25); HEX(1A);
   TAB(40); HEX(1A); TAB(55); HEX(1A);
   TAB(100); HEX(1A)
20 PRINT HEX(0919)
```

In this program line 15 sets tabs in columns 10, 24, 38, 52 and 96. Line 20 then uses the TAB code (09) to position the buffer pointer at the first TAB location (column 10) and the CLEAR TAB code (19) to remove the TAB.

```
20 PRINT HEX(09090919090919)
```

This statement clears the third and the fifth preset tabs.

All preset tabs are automatically cleared when the printer power is turned ON. However, a simple BASIC routine, such as the one shown below, may be used to clear all tabs under program control.

Example:

Clear all possible preset tabs from all print positions (I) in the printer's tab buffer.

```
10 SELECT PRINT 215(255)
20 FOR I = 1 TO 124
30 PRINT HEX(0919);
40 NEXT I : PRINT
```



The semi-colon is placed at the end of statement 30 to suppress the normal carriage return (OD); otherwise a line would advance each time statement 30 was executed. A like example for 12-Pitch is:

```
10 SELECT PRINT 215(255)
20 FOR I = 1 TO 149
30 PRINT HEX(0919);
40 NEXT I : PRINT
```

## CHAPTER 4 HEX CODES

### 4.1 THE HEX FUNCTION

The HEX function is used in a BASIC program to output characters on the Printer (both those that appear and do not appear on the standard keyboards) or to output special Printer Control Codes. The HEX function has the form:

```
HEX(hh[hh] [.] .)
```

where h = a hex digit 0 to 9 or a letter A to F. An even number of characters must always appear in a HEX function; spaces are not allowed. (See the Wang BASIC Reference Manual for hexadecimal characters and codes.) HEX codes for characters and/or printer control can be combined. For example, the following program in memory,

```
:10 SELECT PRINT 215  
:20 PRINT HEX (410DOA42)  
:RUN (EXECUTE)
```

produces: A

B

when run since the code for 'A' is HEX(41), 'carriage return' is HEX(0D), 'line feed' is HEX(0A), and 'B' is HEX(42). (See Appendix A).

### 4.2 CONTROL CODES

When the Model 2271 Printer receives a hex code for a printable character, it simply places the code into its print buffer. Unless the buffer is full, no immediate action is taken. However, certain special hex codes do not enter the buffer, and instead cause immediate action by the printer. These special codes are the printer control codes.

The special Control Codes for the Printer are:

Function	Hex Code	Description
Audio Alarm	HEX(07)	Generates an audible tone about two seconds in duration in the speaker at the rear of the printer. This action is taken as soon as the HEX(07) code is received by the printer regardless of where the code occurs in the PRINT statement.

Example:

```
100 PRINT "1. DESELECT THE PRINTER"  
110 PRINT "2. LOAD FORM #61.3B"  
120 PRINT "3. RESELECT THE PRINTER"  
130 PRINT "4. PRESS 'CONTINUE', 'RETURN';  
      HEX(07)  
140 STOP
```

Backspace	HEX(08)	Causes the internal line buffer pointer to be decremented by one character. Characters entered prior to the Backspace code(s) may be underscored (using HEX(5F)) but may not be overwritten with new characters.
-----------	---------	--

Example:

```
100 PRINT "REPORT #113 - CHEMICAL  
ANALYSIS";  
HEX(080808080808080808080808080808080808);  
HEX(5F5F5F5F5F5F5F5F5F5F5F5F5F5F5F5F5F5F)
```

Output:

```
REPORT #113 - CHEMICAL ANALYSIS
```

Example:

```
100 PRINT "NAME ="; HEX (080808); "XXX"
```

Output:

```
NAME =
```

TAB	HEX(09)	Causes the internal line buffer pointer to be incremented to the next pre-set TAB location.
-----	---------	---

Example:

```
10 REM TAB IS PRE-SET AT COLUMN 30  
15 PRINT TAB(30); HEX(1A)  
20 PRINT HEX(09);"REPORT TITLE"
```

Execution of this program causes 'REPORT TITLE' to be printed starting at column 30.

LINE FEED      HEX(0A)

Causes the current contents of the line buffer to be printed and advances the paper one line.

Example:

```
10 PRINT "WATCH";
20 PRINT HEX(0A);"YOUR";
30 PRINT HEX(0A);"STEP"
```

Output:

```
      WATCH
        YOUR
          STEP
```

Vertical TAB    HEX(0B)

Advances the paper 6 lines

Example:

```
10 PRINT "LIST OF DONORS"
20 PRINT HEX(0B);"NAME";
   TAB(25);"BLOOD TYPE"
```

Output:

```
      LIST OF DONORS
```

```
NAME            BLOOD TYPE
```

TOP OF FORM    HEX(0C)

Advances the paper to the top of the next form (66 line format assumed).

Example:

```
10 PRINT "LIST OF DONORS"
.
.
.
250 PRINT "THIS CONCLUDES THE LIST OF
        DONORS"
260 REM START NEW LISTING
270 PRINT HEX(0C)
```

Carriage Return    HEX(0D)    Prints the current contents of the line buffer and advances the paper one line.

Example:

```
10 PRINT "SPARE PARTS LIST"
20 PRINT HEX(0D0D0D)
30 PRINT "ITEM","QUANTITY"
```

Output:

SPARE PARTS LIST

ITEM                    QUANTITY

Shift Up            HEX(0E)    Places the printer in uppercase mode.

This code is for test purposes only. Printable characters automatically shift the type element up or down.

Shift Down         HEX(0F)    Places the printer in lowercase mode. This code is for test purposes only. Printable characters automatically shift the type element up or down.

Example:

```
10 PRINT "Annual Wage"
```

Output:

Annual Wage

Clear TAB            HEX(19)    Clears a TAB at the current location of the internal line buffer pointer.

Example:

```
10 REM THIS PROGRAM CLEARS THE
   TAB SET AT COLUMN 30
20 PRINT TAB(30); HEX 1A
30 PRINT (0919)
```

Set TAB             HEX(1A)    Sets a TAB at the current location of the internal line buffer pointer. Before setting a tab, the line buffer pointer must be set to the desired location in the line.

Example:

```
10 REM TAB( FUNCTION POSITIONS POINTER  
    TO COLUMN 40  
20 PRINT TAB(40); HEX(1A)
```

Underscore            HEX(5F)

Places an Underscore in the line buffer at the current location of the internal line buffer pointer.

Example:

```
10 PRINT "NO SMOKING PLEASE";  
20 PRINT HEX(080808080808);  
30 PRINT HEX (5F5F5F5F5F5F)
```

Output:

NO SMOKING PLEASE

Note that since the Underscore code does not begin with a zero hexdigit the 2200's internal line count is incremented as each underscore is executed. If underscoring is to be done near the end of the print line, it is advisable to select a line length greater than 124 (10-pitch) or 149 (12-pitch) to prevent an unwanted carriage return from being executed by the 2200 CPU.

Example:

```
10 SELECT PRINT 215(255)  
20 PRINT TAB (120); "AB";  
30 PRINT HEX(08085F5F)
```

Delete                HEX(7F)

Clears buffer of characters sent before the '7F'. The HEX(7F) must appear in the buffer before the 125th character (150th for 12-pitch) or the buffer contents will be printed.

Example:

```
100 PRINT "TITLE=";  
110 PRINT HEX(7F);  
120 PRINT "VALUE="
```

Output:

VALUE =

NOTE:

When control codes HEX(07), HEX(0B), HEX(0C), HEX(0E), HEX(0F) or HEX(7F) are combined with print characters in a single PRINT line, the control code is executed first.

# APPENDICES

## APPENDIX A

### HEXADECIMAL CODES

HEX CODE	PRINTER CHARACTER	HEX CODE	PRINTER CHARACTER	HEX CODE	PRINTER CHARACTER
HEX(07)	Audio Alarm	HEX(38)	8	HEX(5D)	]
HEX(08)	Backspace	HEX(39)	9	HEX(5E)*	!
HEX(09)*	TAB	HEX(3A)	:	HEX(5F)*	Underscore
HEX(0A)	Line Feed	HEX(3B)	;	HEX(60)*	Space
HEX(0B)*	Vertical TAB	HEX(3C)*	[	HEX(61)	a
HEX(0C)*	Top of Form	HEX(3D)	=	HEX(62)	b
HEX(0D)	Carriage Return	HEX(3E)*	]	HEX(63)	c
HEX(0E)*	Shift Up	HEX(3F)	?	HEX(64)	d
HEX(0F)*	Shift Down	HEX(40)	@	HEX(65)	e
HEX(19)*	Clear TAB	HEX(41)	A	HEX(66)	f
HEX(1A)*	Set Tab	HEX(42)	B	HEX(67)	g
HEX(1E)	¢	HEX(43)	C	HEX(68)	h
HEX(1F)	°	HEX(44)	D	HEX(69)	i
HEX(20)	Space	HEX(45)	E	HEX(6A)	j
HEX(21)	!	HEX(46)	F	HEX(6B)	k
HEX(22)	"	HEX(47)	G	HEX(6C)	l
HEX(23)	#	HEX(48)	H	HEX(6D)	m
HEX(24)	\$	HEX(49)	I	HEX(6E)	n
HEX(25)	%	HEX(4A)	J	HEX(6F)	o
HEX(26)	&	HEX(4B)	K	HEX(70)	p
HEX(27)	'	HEX(4C)	L	HEX(71)	q
HEX(28)	(	HEX(4D)	M	HEX(72)	r
HEX(29)	)	HEX(4E)	N	HEX(73)	s
HEX(2A)	*	HEX(4F)	O	HEX(74)	t
HEX(2B)	+	HEX(50)	P	HEX(75)	u
HEX(2C)	,	HEX(51)	Q	HEX(76)	v
HEX(2D)	-	HEX(52)	R	HEX(77)	w
HEX(2E)	.	HEX(53)	S	HEX(78)	x
HEX(2F)	/	HEX(54)	T	HEX(79)	y
HEX(30)	0	HEX(55)	U	HEX(7A)	z
HEX(31)	1	HEX(56)	V		
HEX(32)	2	HEX(57)	W		
HEX(33)	3	HEX(58)	X		
HEX(34)	4	HEX(59)	Y	HEX(7F)*	Clear Buffer
HEX(35)	5	HEX(5A)	Z		
HEX(36)	6	HEX(5B)	[		
HEX(37)	7	HEX(5C)*	Space		

\* Indicates a character that differs from the CRT Character Set.



## APPENDIX B - SPECIFICATIONS

Printout Speed. . . . .	15 characters per second, bidirectional
Print Configuration . . . .	Character element, 10-pitch or 12-pitch
Line Width. . . . .	124 characters at 10-pitch 149 characters at 12-pitch
Character Set . . . . .	Full alphanumeric (95 character ASCII)
Printer Size: Width. . . .	22 in. (55.9 cm)
Depth. . . .	15 5/8 in. (39.7 cm)
Height . . . .	8 3/4 in. (22.2 cm)
Weight. . . . .	51 lb (23.2 kg)
Power Requirements. . . . .	115 or 230 VAC $\pm$ 10% 50 or 60 Hz $\pm$ 1 Hz  125 watts
Fuses . . . . .	1.5 A(SB) for 115 VAC 3A (SB) for 230 VAC
Cables. . . . .	12 ft (3.7m) cable with connector for CPU controller board. 8 ft (2.4m) to power source.
Operating Environment . . . .	50°F to 90°F (10° C to 32°C) 20% to 80% relative humidity, non-condensing allowable, 35% to 65% recommended.

# INDEX

	PAGE
Backspace. . . . .	29
Buffer . . . . .	1
Carriage Return. . . . .	13, 31
Clear TAB. . . . .	26, 31
Combined Parameters. . . . .	18
Combining HEX Codes. . . . .	28
Control Codes. . . . .	28
Control Panel. . . . .	2, 4
Deselecting the Printer. . . . .	19
Device Code. . . . .	9, 10
Device Type. . . . .	9, 12
Formatting Output. . . . .	20
Fuse . . . . .	4
HEX Codes. . . . .	28
HEXPRINT Statement . . . . .	20, 21
Inspection . . . . .	2
Installation . . . . .	2
Introduction . . . . .	1
Left Movement Switch . . . . .	5
Line Feed. . . . .	5
Line Length. . . . .	12
Master Initialization. . . . .	4
Output (Double Spaced) . . . . .	9, 17
Output (Single Spaced) . . . . .	10, 17
Packed Format. . . . .	20, 21
Paper (Loading). . . . .	2
Paper Specification. . . . .	1
Power On/Off Switch. . . . .	4
PRINTUSING Statement . . . . .	20, 23
RETURN Switch. . . . .	6
Ribbon (To Replace). . . . .	3
Right Movement Switch. . . . .	6
SELECT CO Statement (Console Output) . . . . .	17
SELECT LIST Statement. . . . .	16
SELECT PRINT Statement . . . . .	8, 14, 20
SELECT (deselect) Switch . . . . .	5
Set TAB. . . . .	25
Shift Codes. . . . .	31
TAB( Function. . . . .	23
2200 Turn-On Procedure . . . . .	4
2271 Turn-On Procedure . . . . .	4
Underscore . . . . .	32
Unit Address . . . . .	12
Unpacking. . . . .	2
Zoned Format . . . . .	20, 21

## PREVENTIVE MAINTENANCE INFORMATION

### MAINTENANCE

It is recommended that your equipment be serviced quarterly. A Maintenance Agreement is available to assure this servicing automatically. If no Maintenance Agreement is acquired, any servicing must be arranged for by the customer. A Maintenance Agreement protects your investment and offers the following benefits:

**Preventive Maintenance:** Your equipment is inspected quarterly for worn parts, lubricated, cleaned and updated with engineering changes, if any. Preventive maintenance minimizes "downtime" by anticipating repairs before they are necessary.

**Fixed Annual Cost:** When you buy a maintenance agreement, you issue only one purchase order for service for an entire year and receive one annual billing; more frequent billing can be obtained, if desired.

Further information regarding Maintenance Agreements can be acquired from your local Sales Service Office.

**NOTE:**

Wang Laboratories, Inc. does not guarantee or honor maintenance agreements for any equipment modified by the user. Damage to equipment incurred as a result of such modification becomes the financial responsibility of the user.



▲

▼



▲

▼



To help us to provide you with the best manuals possible, please make your comments and suggestions concerning this publication on the form below. Then detach, fold, tape closed and mail to us. All comments and suggestions become the property of Wang Laboratories, Inc. For a reply, be sure to include your name and address. Your cooperation is appreciated.

700-4276

TITLE OF MANUAL: **MODEL 2271 PRINTER USER MANUAL**

COMMENTS:

\_\_\_\_\_  
Fold

\_\_\_\_\_  
Fold



Fold

FIRST CLASS  
PERMIT NO. 16  
Tewksbury, Mass.

**BUSINESS REPLY MAIL**  
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

— POSTAGE WILL BE PAID BY —

WANG LABORATORIES, INC.  
ONE INDUSTRIAL AVENUE  
LOWELL, MASSACHUSETTS 01851

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Cut along dotted line.

Attention: Technical Writing Department

Fold

1

2

3

4

5

6

**WANG COMPUTER PTY. LTD.**

55 Herbert Street  
St. Leonards, 2065, Australia  
TELEPHONE 439-3511  
Telex: 25469

**WANG GESELLSCHAFT M.B.H.**

Merlingengasse 7  
A-1120 Vienna, Austria  
TELEPHONE 85.85.33  
Telex: 74640 Wang a

**WANG EUROPE S.A./N.V.**

250, Avenue Louise  
1050 Brussels, Belgium  
TELEPHONE 02/6400617  
Telex: 61186

**WANG DO BRASIL**

**COMPUTADORES LTDA.**  
Rua Barao de Lucena No. 32  
Botafogo ZC-01 20,000  
Rio de Janeiro RJ, Brasil  
TELEPHONE 226-4326, 266-5364  
Telex: 2123296 WANG BR

**WANG LABORATORIES  
(CANADA) LTD.**

49 Valleybrook Drive  
Don Mills, Ontario M3B 2S6  
TELEPHONE (416) 449-2175  
Telex: 069-66546

**WANG FRANCE S.A.R.L.**

Tour Gallieni, 1  
78/80 Ave. Gallieni  
93170 Bagnole, France  
TELEPHONE 33.1.3602211  
Telex: 680958F

**WANG PACIFIC LTD.**

9th Floor, Lap Heng House  
47-50 Gloucester Road  
Hong Kong  
TELEPHONE 5-274641  
Telex: 74879 WANG HX

**WANG COMPUTER LTD.**

Shindaiso Building No. 5  
2-10-7 Dogenzaka Shibuya-Ku  
Tokyo 150, Japan  
TELEPHONE (03) 464-0644  
Telex: 2424909WCLTKO J

**WANG NEDERLAND B.V.**

Damstraat 2  
Utrecht, Netherlands  
(030) 93-09-47  
Telex: 47579

**WANG COMPUTER LTD.**

302 Great North Road  
Grey Lynn, Auckland  
New Zealand  
TELEPHONE Auckland 762-219  
Telex: CAPENG 2826

**WANG DE PANAMA (CPEC) S.A.**

Apartado 6425  
Calle 45E, No. 9N. Bella Vista  
Panama 5, Panama  
TELEPHONE 69-0855, 69-0857  
Telex: 3282243

**WANG COMPUTER PTE., LTD.**

Suite 1801-1808, 18th Floor  
Tunas Building, 114 Anson Road  
Singapore 2, Republic of Singapore  
TELEPHONE 2218044, 45, 46  
Telex: RS 24160 WANGSIN

**WANG COMPUTERS**

**(SO. AFRICA) PTY. LTD.**  
Corner of Allen Rd. & Garden St.  
Bordeaux, Transvaal  
Republic of South Africa  
TELEPHONE (011) 48-6123  
Telex: 960-86297

**WANG SKANDINAVISKA AB**

Pyramidvaegen 9A  
S-171 36 Solna, Sweden  
TELEPHONE 08/27 27 98  
Telex: 11498

**WANG S.A./A.G.**

Markusstrasse 20  
CH-8042 Zurich 6, Switzerland  
TELEPHONE 41-1-60 50 20  
Telex: 59151

**WANG INDUSTRIAL CO., LTD.**

7 Tun Hwa South Road  
Sun Start Tun Hwa Bldg.  
Taipei, Taiwan  
Republic of China  
TELEPHONE 7522068, 7814181-3  
Telex: 21713

**WANG ELECTRONICS LTD.**

Argyle House, 3rd Floor  
Joel Street  
Northwood Hills  
Middlesex, HA6INS  
TELEPHONE Northwood 28211  
Telex: 923498

**WANG LABORATORIES GmbH**

Moselstrasse 4  
6000 Frankfurt AM Main  
West Germany  
TELEPHONE (0611) 252061  
Telex: 04-16246

**DATA CENTER DIVISION**

20 South Avenue  
Burlington, Massachusetts 01803  
TELEPHONE (617) 272-8550

**WANG COMPUTER SERVICES**

One Industrial Avenue  
Lowell, Massachusetts 01851  
TELEPHONE (617) 851-4111  
TWX 710-343-6769  
Telex: 94-7421

**WANG INTERNATIONAL  
TRADE, INC.**

One Industrial Avenue  
Lowell, Massachusetts 01851  
TELEPHONE (617) 851-4111  
TWX 710-343-6769  
Telex: 94-7421

**WANG**

LABORATORIES, INC.

ONE INDUSTRIAL AVENUE, LOWELL, MASSACHUSETTS 01851, TEL. (617) 851-4111, TWX 710 343-6769, TELEX 94-7421 Printed in U.S.A.

700-4276

6-77-2M

Price: see current list