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Forms Printer 258x/259x Technical Reference

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Contents

CHAPTER 1: Set Initial Conditions Commands

change

The Set Initial Conditions (SIC) command sets the printer to the default values that were set at the factory or to user-defined defaults.

The following data is applicable to both IBM and Epson modes, unless otherwise noted. The SIC command cannot be used in OKI emulation mode.

There are three copies of the settings for each of the parameters specified by the SIC command:

- Factory default settings stored in flash memory
- User default settings stored in NVRAM
- Printer's current settings stored in RAM

Factory   Factory defaults cannot be modified.

User   The SIC command has the ability to override Current settings with the User defaults or Factory defaults. It can then change those values and optionally store then back to NVRAM as the new User defaults.

Current   When the printer is turned on, the current RAM settings are initialized from the User default settings. The basic commands implemented in IBM, Epson and Oki emulations can modify the Current settings stored in RAM but cannot save them back to User Defaults in NVRAM.

SIC Command Format

Format:	ESC	[	K	n1	n2	init	id	parm1	parm 2...	parm 24
Decimal:	27	91	75	n1	0	init	id	parm1	parm 2...	parm 24
Hexadecimal:	1B	5B	4B	n1	00	init	id	parm1	parm 2...	parm 24

Usage Notes:

- "n1 is the low order byte. n2 is the high order byte. n1 and n2 specify the number of mode bytes in the escape sequence. n1 is the number of parameters +2. (the number of parameters plus init and id.) Normally, n1 is 1, 3 or 4. n2 is always 0.

- "init - this parameter specifies which condition the printer should be initialized to. See the Initial Values table below for details.

- "id - This parameter specifies the parm conditions that follow it. See the Id Values table below for details.

Init Values

"init" sets the printer to user-defined or factory settings. The following table describes the valid init values and their affect on the printer default settings initialization, macro settings and download font:

Table 1-1: Initial Values

Dec	Hex	Current Settings	User Default Settings	Default Macro Settings	Other Macro Settings	Download Font
0	00	Initialized to the user default setting. Then updated to updated to reflect parm values in SIC command	unchanged	Initialized to the user default settings.	Not initialized.	Not cleared.
1	01	Initialized to the user default setting. Then updated to updated to reflect parm values in SIC command	unchanged	Initialized to the user default settings.	Not initialized	Cleared.

Table 1-1: Initial Values (Continued)

Dec	Hex	Current Settings	User Default Settings	Default Macro Settings	Other Macro Settings	Download Font
4	04	Initialized to the factory default setting. Then updated to updated to reflect parm values in SIC command	unchanged	Initialized to the factory default settings.	Not initialized.	Not cleared.
5	05	Initialized to the factory default setting. Then updated to updated to reflect parm values in SIC command	unchanged	Initialized to the factory default settings.	Not initialized.	Cleared.
254	FE	Initialized to the user default setting. Then updated to updated to reflect parm values in SIC command	NVRAM updated to reflect parm values in SIC command	Initialized to the user default settings.	Not initialized.	Cleared.
255	FF	Initialized to the factory default setting.	NVRAM updated to reflect parm values in SIC command	Initialized to the factory default setting.	Initialized to the factory default setting.	Cleared.

Id Values

The supported values of Id are as follows. If the Id is any other value, the parm bytes are ignored.

Note: The most common ID values are C5 and C6. Remaining values are listed for backward compatibility. Not all Parms are valid for each Id value. Some are ignored.

Table 1-2: Id Values

Printer	Dec	Hex	Notes
2580 /2581 2590/2591	3	03	Supported in Native mode. Supported in Proprinter III mode (258X only).
2580 /2581 2590/2591	22	16	Parm 1 and parm 2 are valid. If parms 3 - 24 are specified, they are ignored. See the following parm tables.
2590/2591	35	23	
2590/2591	36	24	

Table 1-2: Id Values (Continued)

Printer	Dec	Hex	Notes
2580 /2581 2590/2591	177	B1	Parm 1 is valid. Parm 1 is same as parm 1 of id = 03H, 16H, 23H or 24H.
2580 /2581 2590/2591	180	B4	
2580 /2581 2590/2591	182	B6	Supported in Epson mode. Supported in Native mode. Not valid when Proprinter III mode ON is selected in Setup. (258X only) This id allows the user to select the Emulation mode with parm 1.
2580 /2581 2590/2591	197	C5	Supported in Epson mode. Supported in Native mode. Not valid when Proprinter III mode ON is selected in Setup.(258X only) Parm 1 to parm 24 are valid with this id. See the following parm tables.
2580 /2581 2590/2591	198	C6	Supported in Epson mode. Parm 1 to parm 24 are valid with this id. See the following parm tables.

Note: Id is valid for B6H, C5H and C6H only in Epson mode. If any other value is specified to id in Epson mode, this command sequence is ignored.

Parm Values

Table 1-3: Ids - Dec 3, 22, 35, 36, 177, 180 (Hex 03, 16, 23, 24, B1, B4)

Parm	Bit	Description	On	Off
1		Same action for all Ids.		
	7	Discard byte	Ignore this byte	Process this byte
	6	Reserved		
	5	Alarm	Enable	Disable
	4	Auto CR	No CR after LF	Auto CR after LF
	3	Auto LF	No LF after CR	Auto LF after CR
	2	Form Length	12 inches	11 inches
	1	Slashed Zero	Zero Slashed	Zero not slashed
	0	Character Set	Set 2	Set 1
2		Valid only for Ids Dec 3, 22, 35, 36, (Hex 03, 16, 23, 24)		
	7	Discard byte	Ignore this byte	Process this byte
	6	Code Page	850	437
	5	Reserved		
	4	Reserved		
	3	Reserved		
	2	Reserved		
	1	Line Length	8.0 inches	13.6 inches (2581/2591only)
	0	Reserved		

Table 1-4: Id - Dec 182 (Hex B6)

Parm	Description	Dec	Hex	Action
1	Emulation	0	00	No Change
		1	01	IBM
		2	02	EPSON
		3 - 255	03 - FF	No Change

Table 1-5: Ids - Dec 197, 198 (Hex C5, C6) (Sheet 1 of 9)

Parm	Description	Dec	Hex	Action for Id = Dec 197 / Hex C5	Action for Id = Dec 198 / Hex C6
1	Emulation	0	00	No Change	No Change
		1	01	PPDS	PPDS
		2	02	EPSON	EPSON
		3 - 255	03 - FF	No Change	No Change
2	Panel Disable	0	00	No change	No change
		1	01	Panel Disable	Panel Disable
		2	02	Panel Enable	Panel Enable

Note: Specific buttons can be enabled during Panel Disable mode. The upper 6 bits of parm 2 represent the different buttons on the operator panel as below.

	Bit			OFF	ON
	7. Font			Disabled	Enabled
	6. Pitch			Disabled	Enabled
	5. Micro up			Disabled	Enabled
	4. Micro down			Disabled	Enabled
	3. LF			Disabled	Enabled
	2. Macro			Disabled	Enabled
3	Macro	0	00	No change	No change
		1	01	Macro 1	Macro 1
		2	02	Macro 2	Macro 2
		3	03	Macro 3	Macro 3
		4	04	Macro 4	Macro 4
		5 - 254	05 - FE	No Change	No Change
		255	FF	Disable Macro	Disable Macro

Notes:
- Macro 1 is the original macro that is backward compatible. Macros 2-4 were added to provide additional flexibility when changing between alternate form sizes. Disable macro is functionally the same as Macro 1.
  If init = dec 4, 5 (hex 04, 05) are specified, parm 3 is ignored.
  If init = dec 0, 1, 254, 255 (hex 00, 01, FE, FF) are specified, parm 3 value is used as Macro No. instead of Default Macro setting No.
  If init = dec 254, 255 (hex FE, FF) are specified, parm 3 value is overwritten to Default Macro setting in NVRAM. If the disable (=255) is set to parm 3 Macro No. 1 setting is used to initialize.
- "No change" indicates the printer will retain the current macro. All parameters will overwrite the NVRAM of the current macro.

Table 1-5: Ids - Dec 197, 198 (Hex C5, C6) (Continued) (Sheet 2 of 9)

Parm	Description	Dec	Hex	Action for Id = Dec 197 / Hex C5	Action for Id = Dec 198 / Hex C6
4	FONT	0	00	No Change	No Change
		1	01	Fast Draft	Fast Draft
		2	02	Draft	Draft
		3	03	Gothic	Gothic
		4	04	Courier	Courier
		5	05	Download font	Download font
		6	06	No Change	Prestige
		7	07	No change	Presentor
		8	08	No change	Orator
		9	09	No change	Script
		10 - 255	0A - FF	No change	No Change

Note: Values 06 through FF are not supported for id hex C5 because corresponding fonts are not available for the 258X printers.

Parm	Description	Dec	Hex	Action for Id = Dec 197 / Hex C5	Action for Id = Dec 198 / Hex C6
5	Pitch	0	00	No Change	No Change
		1	01	10 pitch	10 pitch
		2	02	12 pitch	12 pitch
		3	03	15 pitch	15 pitch
		4	04	17.1 pitch	17.1 pitch
		5	05	20 pitch	20 pitch
		6	06	PS	PS
		7	07	24 pitch	24 pitch
		8 - 255	08 - FF	No Change	No Change

Table 1-5: Ids - Dec 197, 198 (Hex C5, C6) (Continued) (Sheet 3 of 9)

Parm	Description	Dec	Hex	Action for Id = Dec 197 / Hex C5	Action for Id = Dec 198 / Hex C6
Note: Parm 6 actions are based on the XNLS Code Page. Choose appropriate parm 6 data.					
6	Code Page (XNLS = Std / OCR-B)	0	00	No Change	No Change
		1	01	437	437
		2	02	850	850
		3	03	860	860
		4	04	863	863
		5	05	865	865
		6	06	437G	437G
		7	07	813	813
		8	08	851	851
		9	09	853T	853T
		10	0A	857	857
		11	0B	869	869
		12	0C	920	920
		13	0D	1053	1053
		14	0E	861	861
		15	0F	1004	1004
		16	10	858	858
		17 - 255	11 - FF	No Change	No Change

Table 1-5: Ids - Dec 197, 198 (Hex C5, C6) (Continued) (Sheet 4 of 9)

Parm	Description	Dec	Hex	Action for Id = Dec 197 / Hex C5	Action for Id = Dec 198 / Hex C6
6	Code Page (XNLS = Eastern)	0	00	No Change	No Change
		1	01	437	437
		2	02	850	850
		3	03	852	852
		4	04	855	855
		5	05	866	866
		6	06	1855	1855
		7	07	1852	1852
		8	08	2852	2852
		9	09	3852	3852
		10	0A	4852	4852
		11	0B	1250	1250
		12	0C	1251	1251
		13	0D	912	912
		14	0E	915	915
		15	0F	1866	1866
		16	10	858	858
		17 - 255	11 - FF	No Change	No Change

Table 1-5: Ids - Dec 197, 198 (Hex C5, C6) (Continued) (Sheet 5 of 9)

Parm	Description	Dec	Hex	Action for Id = Dec 197 / Hex C5	Action for Id = Dec 198 / Hex C6
6	Code Page (XNLS = Baltic)	0	00	No Change	No Change
		1	01	437	437
		2	02	850	850
		3	03	858	858
		4	04	866	866
		5	05	915	915
		6	06	1251	1251
		7	07	1866	1866
		8	08	775	775
		9	09	919	919
		10	0A	1257	1257
		11	0B	916	916
		12	0C	918	918
		13	0D	2866	2866
		14	0E	771	771
		15	0F	929	929
		16	10	773	773
		17 - 255	11 - FF	No Change	No Change
6	Code Page (XNLS = Arabic)	0	00	No Change	No Change
		1	01	437	437
		2	02	850	850
		3	03	864	864
		4	04	1046	1046
		5	05	1098	1098
		6	06	1198	708
		7	07	708	720
		8	08	720	449p
		9	09	449p	858
		10	0A	858	
		11 - 255	0B - FF	No Change	No Change

Table 1-5: Ids - Dec 197, 198 (Hex C5, C6) (Continued) (Sheet 6 of 9)

Parm	Description	Dec	Hex	Action for Id = Dec 197 / Hex C5	Action for Id = Dec 198 / Hex C6
6	Code Page (XNLS = Levant)	0	00	No Change	No Change
		1	01	437	437
		2	02	850	850
		3	03	864	864
		4	04	1046	1046
		5	05	1098	1098
		6	06	1198	862
		7	07	862	856
		8	08	856	1862
		9	09	916	916
		10	0A	1862	858
		11	0B	858	
		12 - 255	0C - FF	No Change	No Change
6	Code Page (XNLS = OKI)	0	00	No Change	
		1	01	437	
		2	02	850	
		3	03	860	
		4	04	863	
		5	05	865	
		6	06	437G	
		7	07	813	
		8	08	851	
		9	09	853T	
		10	0A	857	
		11	0B	869	
		12	0C	920	
		13	0D	1040	
		14	0E	1041	
		15	0F	850B	
		16 - 255	10 - FF	No Change	
7	Form Length	0	00	No Change	No Change
		1 - 176	01 - B0	1 to 176 lines (Max 22")	1 to 176 lines (Max 22")
		177 - 255	B1 - FF	No Change	No Change

Table 1-5: Ids - Dec 197, 198 (Hex C5, C6) (Continued) (Sheet 7 of 9)

Parm	Description	Dec	Hex	Action for Id = Dec 197 / Hex C5	Action for Id = Dec 198 / Hex C6
8	Lines per inch	0	00	No Change	No Change
		1	01	3	3
		2	02	4	4
		3	03	6	6
		4	04	8	8
		5 - 255	05 - FF	No Change	No Change
9	Left Margin	0	00	No Change	No Change
		1	01	0 inch	0 inch
		2	02	1 inch	1 inch
		3	03	2 inch	2 inch
		4	04	3 inch	3 inch
		5 - 255	05 - FF	No Change	No Change
10	Right Margin	0	00	No Change	No Change
		1	01	4 inch	4 inch
		2	02	5 inch	5 inch
		3	03	6 inch	6 inch
		4	04	7 inch	7 inch
		5	05	8 inch	8 inch
		6	06	13.6 inch (2581 only)	13.6 inch (2591 only)
		7 - 255	07 - FF	No Change	No Change
11	Bottom Margin	0	00	No Change	No Change
		1	01	0 inch	0 inch
		2	02	1/2 inch	1/2 inch
		3	03	1 inch	1 inch
		4	04	2 inch	2 inch
		5	05	3 inch	3 inch
		6 - 255	06 - FF	No Change	No Change

Table 1-5: Ids - Dec 197, 198 (Hex C5, C6) (Continued) (Sheet 8 of 9)

Parm	Description	Dec	Hex	Action for Id = Dec 197 / Hex C5	Action for Id = Dec 198 / Hex C6
12	Alarm	0	00	No change	No change
		1	01	Disable Alarm	Disable Alarm
		2	02	Enable Alarm	Enable Alarm
		3 - 255	03 - FF	No Change	No Change
13	Auto CR	0	00	No change	No change
		1	01	ON	ON
		2	02	OFF	OFF
		3 - 255	03 - FF	No Change	No Change
14	Auto LF	0	00	No change	No change
		1	01	ON	ON
		2	02	OFF	OFF
		3 - 255	03 - FF	No Change	No Change
15	Slash Zero	0	00	No change	No change
		1	01	Zero slashed	Zero slashed
		2	02	Zero not slashed	Zero not slashed
		3 - 255	03 - FF	No Change	No Change
16	Character Set	0	00	No change	No change
		1	01	Set 1	Set 1
		2	02	Set 2	Set 2
		3 - 255	03 - FF	No Change	No Change
17	Bidirectional	0	00	No change	No change
		1	01	Uni-Directional	Uni-Directional
		2	02	Bi-Directional	Bi-Directional
		3 - 255	03 - FF	No Change	No Change
18	Sheet Feeder	0	00	No change	No change
		1	01	Disable	Disable
		2	02	Enable	Enable
		3 - 255	03 - FF	No Change	No Change

Table 1-5: Ids - Dec 197, 198 (Hex C5, C6) (Continued) (Sheet 9 of 9)

Parm	Description	Dec	Hex	Action for Id = Dec 197 / Hex C5	Action for Id = Dec 198 / Hex C6
19	Lock	0	00	No change	No change
		1	01	Font Lock	Font Lock
		2	02	Pitch Lock	Pitch Lock
		3	03	Font and Pitch Lock	Font and Pitch Lock
		4	04	Font and Pitch Unlock	Font and Pitch Unlock
		254	FE	SIC Command Lock	SIC Command Lock
		255	FF	SIC Command Unlock	SIC Command Unlock
20	FF Enable	0	00	No Change	Ignore
		1	01	Ignore FF	
		2	02	Honor FF	
21	TOF Read	0	00	No Change	No Change
		1	01	TOF Read Disable	TOF Read Disable
		2	02	TOF Read Enable	TOF Read Enable
22	Tractor	0	00	No Change	No Change
		1	01	Tractor 1	Tractor 1
		2	02	Tractor 2	Tractor 2
23	Tear Off	0	00	No Change	No Change
		1	01	On	On
		2	02	Off	Off
		3	03	One second	One second
24	PnP (Plug & Play)	0	00	No Change	No Change
		1	01	Enable	Enable
		2	02	Disable	Disable

CHAPTER 2: IBM Emulation Mode Printer Commands

change

This section provides a detailed description of IBM emulation mode commands you can use with your printer.

Control Codes

Control codes are one-character printer commands that are used to:

- Manage the printing of a job.
- Control the movement of the cursor, which changes the current print position.
- Control secondary font selection, such as condensed and double-wide.

The first 32 characters of the Standard ASCII table are control codes. This printer uses the following control codes.

Table 2-1: Control Codes

Code Name	Symbol	Description	Value (Dec)	Value (Hex)
Beeper	BEL	Sounds the printer beeper for approximately 1 second.	7	07
Backspace	BS	Causes the printer to move the current print position one character position to the left, but not beyond the left margin setting.	8	08
Horizontal Tab	HT	Moves the print head to the next horizontal tab position specified by the ESC D command. If no tab position is set or programmed, tabs are set by default to every 8th column, beginning at column 9. When no tab is set between the current position and the right margin or if the tabs are all cleared, the code is ignored.	9	09
Line Feed	LF	Advances the paper one line on the page. An automatic carriage return may be optionally disabled.	10	0A

Table 2-1: Control Codes (Continued)

Code Name	Symbol	Description	Value (Dec)	Value (Hex)
Vertical Tab	VT	Advances the paper to the next vertical tab position set by the ESC B command. If no tab position is set, the printer performs a single line feed. If the next vertical tab position is greater than the form length (or form length minus skip perforation), the VT does a line feed. An automatic carriage return may be optionally disabled	11	0B
Form Feed	FF	Advances the paper to the top of the next page and does a carriage return.	12	0C
Carriage Return	CR	Moves the current print position to the left margin of the current line. An automatic line feed may be optionally added by the setup.	13	0D
Double-Wide Printing by Line	SO	Prints all characters in double-width mode. This mode is canceled by the receipt of ESC [@, ESC W n, CR, LF, VT, FF, DC4, CAN or auto wrap.	14	0E
Condensed Printing	SI	Condenses printing from 10 characters per inch (cpi) to 17.1 and 12 cpi to 20.	15	0F
Select Printer	DC1	Selects the printer, causing all subsequent data to be accepted.	17	11
Select 10 cpi	DC2	Returns condensed printing to normal (10 cpi). Cancels SI mode.	18	12
Deselect Printer	DC3	This control code has no effect on the parallel interface. This command is accepted and ignored.	19	13
Cancel Double-Wide Printing by Line	DC4	Cancels double-width printing mode and returns printing to normal.	20	14
Cancel Data	CAN	Clears current line buffer of data already received to print on the current line. Does not change the current print position	24	18

Escape Sequences

An escape sequence (two or more characters of information) lets you change the way the printer is currently printing. Like a control code, it gives you control over the printed output. The escape sequence begins with the character ESC (decimal 027, hexadecimal 1B). The printer recognizes this character as the beginning of a printer command signaling that the information following is control information and not data to be printed.

Printer Command Parameters

A command parameter sets the value for a command. This value stays constant until either a different value resets the command or a command resets the printer to its default values. For example, after the printer receives a command that selects a right margin beginning at column 63, the right margin of each printed page begins at column 63. The margin remains constant until a right margin command with a different value resets the margin, or the printer is reset.

In this section, command parameters are indicated by a lowercase **n**. Usage Notes explain how to compute this parameter.

Command Structure

Data is pending.

Example of IBM Emulation Mode Printer Command

Data is pending.

Printer Command Quick Reference (IBM Emulation Mode)

Data is pending.

Control Codes in ESC Sequence Format

The following ESC sequences match the Control Code commands. See that section for a full description of each Control Code.

Escape sequences utilize the following format:

Format	ESC	BEL
Decimal	27	7
Hexadecimal	1B	07

Table 2-2: Escape Sequence Equivalents to Control Codes

Code Nem	Format ESC	Decimal 27	Hexadecimal 1B
Beeper	BEL	7	07
Backspace	BS	8	08
Horizontal Tab	HT	9	09
Line Feed	LF	10	0A
Vertical Tab	VT	11	0B
Form Feed	FF	12	0C
Carriage Return	CR	13	0D
Double-Wide Printing by LIne	SO	14	0E
Condensed Printing	SI	15	0F
Select Printer	DC1	17	11
Select 10 cpi	DC2	18	12
Deselect Printer	DC3	19	13

Table 2-2: Escape Sequence Equivalents to Control Codes (Continued)

Code Nem	Format ESC	Decimal 27	Hexadecimal 1B
Cancel Double-Wide Printing by Line	DC4	20	14
Cancel Data	CAN	24	18

General Printer Commands

The following are general Printer Commands.

Set Print Direction

This command sets the printer to print either unidirectional (left to right) printing or returns to bi-directional printing.

Format	ESC	U	**n**
Decimal	27	85	**n**
Hexadecimal	1B	55	**n**

USAGE NOTE

The value of n can be either of the following:

- 1 (dec) 01 (hex) = Unidirectional
- 0 (dec) 00 (hex) = Bi-directional

Continuous Double-Wide Printing

This command selects or cancels a double-wide printing mode that is not canceled by line feed terminators.

Format	ESC	W	**n**
Decimal	27	87	**n**
Hexadecimal	1B	57	**n**

USAGE NOTE

The value of n can be either of the following:

- 1 (dec) 01 (hex) = Selects double-wide printing mode
- 0 (dec) 00 (hex) = Cancels double-wide printing mode

Deselect Printer

When this command is sent, the printer ignores all data except DC1.

Format	ESC	Q	**n**
Decimal	27	81	**n**
Hexadecimal	1B	51	**n**

USAGE NOTE

The following values of **n** are valid:

Model	Decimal	Hexadecimal	Pro-III Mode Setting in Setup
2580	3	03	Pro-III Mode ON
	182	B6	Pro-III Mode OFF
2581	22	16	Pro-III Mode ON
	184	B8	Pro-III Mode OFF
2590	35	23	
	185	B9	
2591	16	24	
	183	B7	

Stop Printing (259X only)

This command stops printing and causes the printer to go into OFF LINE mode. Pressing the Start/Stop key returns the printer to ON LINE mode.

Format	ESC	j
Decimal	27	106
Hexadecimal	1B	6A

Print Position Commands

Relative Move Inline Forward (n/120")

This command moves the current print position to the right by the distance specified in the parameter.

Format	ESC	d	**Ln**	**Hn**
Decimal	27	100	**Ln**	**Hn**
Hexadecimal	1B	64	**Ln**	**Hn**

USAGE NOTES

- Any attempt to use this command to move the print position beyond the current right margin leaves the print position set to the right margin.

- If underscoring and/or overscoring are in effect, the space of the move is underscored/overscored (unlike the case of a horizontal tab).

- The unit of measure is 1/120 inch. The position will be moved relative to the current print position. The distance is computed as (Ln+(Hn*256)) in inches.

- When a value is represented by two parameter bytes, value (A) = Ln + Hn X 256. Calculate values of A less than 256.

  – Hn is 0.
  – Ln is the value.

- To calculate values of A equal to or greater than 255.

  – Divide the value A by 256.
  – The result is Hn.
  – The remainder is Ln.

Automatic Line Feed (LF)

Turns the automatic line feed mode On and Off.

Format	ESC	5	**n**
Decimal	27	53	**n**
Hexadecimal	1B	35	**n**

USAGE NOTES

The value of n can be either of the following:

- 1 (dec) 01 (hex) = ON
- 0 (dec) 00 (hex) = OFF
- When on, executes an automatic line feed when a carriage return is received.

Reverse Line Feed

This command feeds the paper one line in the reverse direction.

Format	ESC	]
Decimal	27	93
Hexadecimal	1B	5D

Caution: This command is not recommend. Repetitive use of this command can cause a paper jam.

Set Vertical Units (259X only)

For 259x printers only.

This command selects the line feed spacing increment for the following commands:

- Set Graphics Line Spacing (ESC 3)
- Graphics Variable Line Spacing (ESC J).

Format	ESC	[	\	**n1**	**n2**	**m1**	**m2**	**m3**	**m4**
Decimal	27	91	92	**n1**	0	0	0	**m3**	**m4**
Hexadecimal	1B	5B	5C	**n1**	00	00	00	**m3**	**m4**

USAGE NOTES

- The default is 1/216 inch. The supported alternative is 1/180 inch and 1/360 inch.

- n1 and n2 specify the number of mode bytes contained in this escape sequence. Normally, n1 is 4, and n2 is 0.

- m1 and m2 are ignored.

- m3 and m4 set the base units as follows:

Table 2-3: Set Vertical Unit - m3 and m4 values

m3		m4		
Decimal	**Hexadecimal**	**Decimal**	**Hexadecimal**	**Unit**
216	D8	00	00	1/216
180	B4	00	00	1/180
104	68	01	01	1/360

Select 1/8" Line Spacing

This command (ESC zero) sets the line spacing at 1/8 inch between each line, which is 8 lines per inch (lpi).

Format	ESC	0
Decimal	27	48
Hexadecimal	1B	30

Select 7/72" Line Spacing

This command sets the line spacing at 7/72 inch between each line, which is 10.3 lpi.

Format	ESC	1
Decimal	27	49
Hexadecimal	1B	31

Set Text Line Spacing (n/72")

This command sets line spacing in n/72 inch increments. To activate the line spacing, use the printer command Start Text Line Spacing (ESC 2).

Format	ESC	A	**n**
Decimal	27	65	**n**
Hexadecimal	1B	41	**n**

USAGE NOTE

Valid values for n are 1 through 85 (decimal), 01 through 55 (hexadecimal).

Start Text Line Spacing

This command activates the line spacing designated by the Set Line Spacing for Text (ESC A) printer command. If no value is set by ESC A, command sets the line spacing to 1/6 inch, which is 6 lpi.

Format	ESC	2
Decimal	27	50
Hexadecimal	1B	32

Page/Form Layout Commands

Set All Tabs to Power On Setting

This command sets the horizontal tabs at every 8th column, beginning at column 9 (9, 17, 25, and so on) and clears all vertical tabs.

Format	ESC	R
Decimal	27	82
Hexadecimal	1B	52

USAGE NOTE

- To set user-defined tabulation stops, use printer command ESC D for horizontal tabs and ESC B for vertical tabs.

Set Horizontal Tabs

This command sets up to 28 tabulation stops to be used with the printer command HT, Horizontal Tabulation.

Format	ESC	D	**n1**	**...**	**n28**	0
Decimal	27	68	**n1**	**...**	**n28**	0
Hexadecimal	1B	44	**n1**	**...**	**n28**	00

USAGE NOTES

- Set the tabulation stops in ascending order (n1.....n28).
- The last digit in the sequence must be 0 to terminate the command.
- Horizontal tabs are specified by column number. The left most column is numbered one.
- ESC D 0 clears all existing horizontal tab stops.
- ESC R (Set Default Tabulation Stops) resets to the default horizontal tabulation stops.
- The printer command HT, Horizontal Tabulation, activates the tabulation stops set by this Escape sequence.

Set Vertical Tabs

Sets as many as 64 tabulation stops by line number.

Format	ESC	B	**n1**	**...**	**n64**	0
Decimal	27	66	**n1**	**...**	**n64**	0
Hexadecimal	1B	44	**n1**	**...**	**n64**	00

USAGE NOTES

- Set the tabulation stops in ascending order (n1.....n64).
- The last digit in the sequence must be 0 to terminate the command.
- Vertical tab positions are specified by a line number, and the first line is numbered one.
- ESC B 0 or ESC R (Set Default Tabulation Stops) clears all vertical tab stops.
- The printer command VT, Vertical Tabulation activates the tabulation stops set by this escape sequence.
  - If no tab position is set, the printer performs a single line feed.
  - If the next vertical tab position is greater than the form length (or form length minus skip perforation), the VT does a line feed.
  - An automatic carriage return may be optionally disabled.

Set Horizontal Margins

This command sets the left and right margins.

Format	ESC	X	**n**	**m**
Decimal	27	88	**n**	**m**
Hexadecimal	1B	58	**n**	**m**

USAGE NOTES

- n selects the left margin position.
- m selects the right margin position.
- Margins are specified in the character positions at the current pitch and are stored in absolute displacement from the left edge of the paper.
- The values for n and m must be from 0 and 255. If the value is set at 0, the margin is left unchanged.

Set Automatic Perforation Skip

This command specifies the number of lines to be skipped at the bottom of each page, which creates a bottom margin.

Format	ESC	N	**n**
Decimal	27	78	**n**
Hexadecimal	1B	4E	**n**

USAGE NOTES

- This command remains in effect until:
    - Cancel Skip Perforation (ESC O) printer command is received.
    - Set Form Length in Lines (ESC C) printer command is received.
    - Set Form Length in Inches (ESC C 0) printer command is received.
- Valid values for n are 1 through 255 (decimal), 01 through FF (hexadecimal).

Cancel Automatic Perforation Skip

This command cancels Set Automatic Perforation Skip (ESC N).

Format	ESC	O
Decimal	27	79
Hexadecimal	1B	4F

Proportional Space Mode

This command turns proportional space mode on and off.

Format	ESC	P	**n**
Decimal	27	80	**n**
Hexadecimal	1B	50	**n**

USAGE NOTES

- The value of n can be either of the following:
    - 1 (dec) 01 (hex) = ON
    - 0 (dec) 00 (hex) = OFF
- (259x only) ON changes character pitch to the LQ proportional mode. OFF returns character pitch in LQ mode to the pitch selected before the proportional space mode was turned on.

Set Top of Form

This command sets the first line of printing on each page to the current vertical paper position.

Format	ESC	4
Decimal	27	52
Hexadecimal	1B	34

Set Form Length in Inches

This command sets the form length to a specified number of inches.

Format	ESC	C	00	**n**
Decimal	27	67	00	**n**
Hexadecimal	1B	43	00	**n**

USAGE NOTES

- Valid values for n are 1 through 255 (decimal), 01 through FF (hexadecimal).
- When the command is sent, the current vertical position becomes the new top of form.
- Automatic Perforation Skip is canceled

Set Form Length in Lines

This command sets the form length to a specified number of lines.

Format	ESC	C	**n**
Decimal	27	67	**n**
Hexadecimal	1B	43	**n**

USAGE NOTES

- Valid values for n are 1 through 255 (decimal), 01 through FF (hexadecimal), and works in conjunction with the current line spacing (ESC A).
- When the command is sent, the current vertical position becomes the new top of form.
- Automatic Perforation Skip is canceled.

Character Commands

Select Character Set 1

Selects character set 1 for printing.

Character set 1 contains characters and symbols that are used in the English language.

Format ESC 7

Decimal 27 55

Hex 1B 37

See page **YYY** for more information. **{Reference will be updated when document is finalized.}**

Select Character Set 2

Selects character set 2 for printing.

Character set 2 contains characters and symbols that are used in English and non-English languages.

Format ESC 6

Decimal 27 54

Hex 1B 36

See page **YYY** for more information. **{Reference will be updated when document is finalized.}**

Download a Character Set

See page **YYY** for more information. **{Reference will be updated when document is finalized.}**

Select Print Mode

This command (ESC I - capital i) selects the normal font or the download font in Draft, NLQ (258x only) or LQ (259x only).

Format	ESC	I	**n**
Decimal	27	73	**n**
Hexadecimal	1B	49	**n**

USAGE NOTES

- This command cancels any print combinations that conflict with ESC I.
- The following table shows valid values for n for the 248x and 249x printers. The command is ignored if any other value is entered:

Table 2-4: Print Mode Values

Printer Model	Decimal	Hexadecimal	Print Mode	
258X	0	00	Draft	Resident
	1	01	Fast DP (12 cpi)	Resident
	2	02	NLQ Gothic	Resident
	3	03	NLQ Courier	Resident
	4	04	Draft	Download
	5	05	Fast DP (12 cpi)	Download
	6	06	NLQ	Download
	7	07	NLQ II	Download
	8	08	Draft	Download
	9	09	Fast DP (12 cpi)	Download
	10	0A	NLQ Gothic	Download
	11	0B	NLQ Courier Italic	Download
	12	0C	Draft	Download
	13	0D	Fast DP (12 cpi)	Download
	14	0E	NLQ	Download
	15	0F	ALT NLQ II	Download

Table 2-4: Print Mode Values (Continued)

Printer Model	Decimal	Hexadecimal	Print Mode	
259X	0	00	(Draft) 10 cpi	Normal
	8	08	(Draft) 12 cpi	Normal
	16	10	(Draft) 17 cpi	Normal
	2	02	(LQ) 10 cpi - Courier	Normal
	10	0A	(LQ) 12 cpi -Prestige	Normal
	18	12	(LQ) 17 cpi -Courier	Normal
	3	03	(LQ) Proportional	Normal
	4	04	10 cpi Draft	Download
	12	0C	12 cpi Draft	Download
	20	14	17 cpi Draft	Download
	6	06	10 cpi LQ	Download
	14	0E	12 cpi LQ	Download
	22	16	17 cpi LQ	Download
	7	07	Proportional LQ	Download

Code Page Commands

Set Code Page

Use this printer command to change the active code page.

Format	ESC	[	T	**n1**	**n2**	**n3**	**n4**	**Hc**	**Lc**
Decimal	27	91	84	**n1**	**n2**	0	0	**Hc**	**Lc**
Hexadecimal	1B	5B	54	**n1**	**n2**	00	00	**Hc**	**Lc**

USAGE NOTES

- n1 is a one-byte binary number that is the less significant byte of the two-byte parameter count.

- n2 is a one-byte binary number that is the more significant byte of the two-byte parameter count. Zero is a valid count.

- n3 and n4 are always 0.

- Hc and Lc are two-byte values that specify the code page to be used. See"Code Page Table" on page A-1 for decimal and hexadecimal values.

- This command is ignored if an unavailable code page is specified.

- To calculate Hc Lc for a code page that is not shown:
  - Divide the code page number, such as 437, by 256.
  - The whole number result is the Hc value.
  - The remainder is the Lc value.
  - If your code page has an alphabetic character, such as 437G, add 10,000 to the code page number, then divide by 256.

Continuously Print From All Character Chart

This command prints the next (n = m X 256) characters from the All Characters Chart.

Format	ESC	\	**Ln**	**Hn**	**n1**	**...**	**nn**
Decimal	27	92	**Ln**	**Hn**	**n1**	**...**	**nn**
Hexadecimal	1B	5C	**Ln**	**Hn**	**n1**	**...**	**nn**

USAGE NOTES

- Identify the number of characters (A) that you want to print.

- – When a value is represented by two parameter bytes, value (A) = Ln + Hn X 256. Calculate values of A less than 256.
  - • Hn is 0.
  - • Ln is the value.
- – To calculate values of A equal to or greater than 255.
  - • Divide the value A by 256.
  - • The result is Hn.
  - • The remainder is Ln.

- The variables, n1 n2 n3 and so on, are the number of characters that you want to print. For example, for each character, n1 n2 n3...., that you want to print, you must input the decimal or hexadecimal digit for that character.

- Use the "Code Page Table" on page A-1 for decimal and hexadecimal values.
  - – Locate the character on the code page table.
  - – Use the decimal or hexadecimal digit for that character in the printer command format.

Print One Character

This command prints the next character from the All Characters Chart.

Format	ESC	^
Decimal	27	94
Hexadecimal	1B	5E

Style Commands

Set Print Quality

This command changes the print quality.

Format	ESC	[	d	**n1**	**n2**	**m**
Decimal	27	91	100	**n1**	**n2**	**m**
Hexadecimal	1B	5B	64	**n1**	**1n**	**m**

USAGE NOTES

- n1 and n2 specify the number of parameter bytes contained in this escape sequence. Normally, n1 is 1, and n2 is 0.

m specifies the print quality as follows:

Table 2-5: Set Print Quality m parameter values

Printer Model	Decimal	Hexadecimal	Quality
258X	0	00	No change
	1 - 63	01 - 3F	Fast Draft
	64 - 127	40 - 7F	Draft
	128 - 254	80 - E	Near Letter Quality (NLQ)
	255	FF	Default Font
259X	0	00	No change
	1 - 63	01 - 3F	Fast Draft
	64 - 127	40 - 7F	Draft
	128 - 191	80 - BF	Letter Quality (LQ)
	192 - 254	C0 - FE	Enhanced Leter Quality (ELQ)
	3	03	(LQ) Proportional
	255	FF	Default Font

Select Global Font

This command allows the user to vary the font, pitch and code page.

Format	ESC	[	I	**Ln**	**Hn**	**Hf**	**Lf**	**Hs**	**Ls**	**Sm**	**Nul**	**Hc**	**Lc**
Decimal	27	91	73	**Ln**	**Hn**	**Hf**	**Lf**	**Hs**	**Ls**	**Sm**	**Nul**	**Hc**	**Lc**
Hexadecimal	1B	5B	49	**Ln**	**Hn**	**Hf**	**Lf**	**Hs**	**Ls**	**Sm**	**Nul**	**Hc**	**Lc**

USAGE NOTES

- Count the number of parameter bytes contained in this escape sequence as value (A).

  – When a value is represented by two parameter bytes, value (A) = Ln + Hn X 256. Calculate values of A less than 256.
  - Hn is 0.
  - Ln is the value.
  – To calculate values of A equal to or greater than 255.
  - Divide the value A by 256.
  - The result is Hn.
  - The remainder is Ln.

- If Font Lock and Pitch Lock are active, this command is ignored.

- The font global ID (Hf = high byte and Lf = low byte) specify the pitch and font typestyle you want to print. The Global Font Id Tables below describe the Hf and Lf variables. When the font global ID is valid data, size parameters (Hs, LS, Sm) are ignored.

- The size parameters (Hs, Ls and Sm) specify the pitch. They are valid when font ID (Hf and Lf) is not valid. Nul data is ignored. See Table 2-12: "Global Font Size Parameters" on page 2-26 for the valid size parameters.

- Sm specifies the size modifier. Values of Sm are:
  – 00 - No change
  – 01 - Width is measured in increments of 0.018 mm (1/1440 in.)
  – 02, 03 - Font is proportional
  – All other values are regarded as 0.

- The code page ID (Hc and Lc) specify the Code Page. See"Code Page Table" on page A-1 for decimal and hexadecimal values.

- This command uses the following best-fit algorithm in the following order:
  – Requested font, pitch and code page
  – Requested pitch and code page, first font found
  – Requested code page, first font and pitch found
  – No change

The following table applies to all models, except where noted.

Table 2-6: Global Font Id - Courier

Pitch	Decimal Hf Lf Values				Hexadecimal Hf Lf Values			
	Normal	Bold	Italic	Bold/Italic	Normal	Bold	Italic	Bold/Italic
5 (10 DW/DH)	0 244	0 245			00 F4 00 F6	00 F5		
10	0 11	0 46	0 18	0 57	00 0B	00 2E	00 12	00 39
12	1 235 0 85	0 108	0 92	0 116	01 EB 00 55	00 6C	00 5C	00 74
15	1 236 0 223 (259X)	0 214	0 215	0 216	01 EC 00 DF(259X)	00 D6	00 D7	00 D8
17	01 237 0 254	0 253			01 ED 00 FE	00 FD		
20	1 238 0 198 (259X)				01 EE 01 C6 (259X)			
24 (259X)	1 30				01 1E			
Proportional spacing	0 171	0 184	0 172	0 185	00 AB	00 B8	00 AC	00 B9

The following table applies to all models, except where noted.

Table 2-7: Global Font Id - Gothic

Pitch	Decimal Hf Lf Values				Hexadecimal Hf Lf Values			
	Normal	Bold	Italic	Bold/Italic	Normal	Bold	Italic	Bold/ Double strike
5 (10 DW/DH)	0 241	0 242		0 243 (259X)	00 F1	00 F2		00 F3 (259X)
10	0 36	0 39 (258X)			0 24	00 27 (258X)		
12	1 143 0 87	0 110	0 109		01 8F 00 57	00 6E	00 6D	
15	1 142 0 222	0 220			01 8E 00 DE	00 DC		
17	1 141 0 255				01 8D 00 FF			
20	1 140 1 25 (259X)				01 8C 01 19 (259X)			
24 (259X)	1 32				01 20			
Proportional spacing	0 174	0 157	0 162		00 AE	00 9D	00 A2	

The following table applies to 259X models only.

Table 2-8: Global Font Id - Prestige

Pitch	Decimal Hf Lf Values				Hexadecimal Hf Lf Values			
	Normal	Bold	Italic	Bold/Italic	Normal	Bold	Italic	Bold/Italic
5 (10 DW/DH)								
10	0 12	00 60			00 0C	00 3C		
12	1 239 0 86	0 111	0 112		01 EF 00 56	00 6F	00 70	
15	1 240 1 221				01 F0 00 DD			
17.1	1 201 1 0				01 C9 01 00			
20	1 202				01 CA			
24	1 31				01 1F			
Proportional spacing	1 164				00 A4			

The following table applies to 259X models only.

Table 2-9: Global Font Id - Presentor

Pitch	Decimal Hf Lf Values				Hexadecimal Hf Lf Values			
	Normal	Bold	Italic	Bold/Italic	Normal	Bold	Italic	Bold/Italic
5 (10 DW/DH)								
10	0 25				00 19			
12	1 208				01 D0			
15	1 209				01 D1			
17.1	1 210				01 D2			
20	1 211				01 D3			
24	1 35				01 23			
Proportional spacing	0 199				00 C7			

The following table applies to 259X models only.

Table 2-10: Global Font Id - Orator

Pitch	Decimal Hf Lf Values				Hexadecimal Hf Lf Values			
	Normal	Bold	Italic	Bold/Italic	Normal	Bold	Italic	Bold/Italic
5 (10 DW/DH)								
10	0 5				00 05			
12	1 203				01 CB			
15	1 204				01 CC			
17.1	1 205				01 CD			
20	1 206				01 CE			
24	1 33				01 21			
Proportional spacing	0 198				00 C6			

The following table applies to 259X models only.

Table 2-11: Global Font Id - Script

Pitch	Decimal Hf Lf Values				Hexadecimal Hf Lf Values			
	Normal	Bold	Italic	Bold/Italic	Normal	Bold	Italic	Bold/Italic
5 (10 DW/DH)								
10	0 212				01 D4			
12	1 213				01 D5			
15	1 214				01 D			
17.1	1 215				01 D7			
20	1 216				01 D8			
24	1 36				01 24			
Proportional spacing	0 200				00 C8			

Table 2-12: Global Font Size Parameters

Pitch	2580 / 25281		2590 / 2591	
	Decimal Hs Ls Values	Hexadecimal Hs Ls Values	Decimal Hs Ls Values	Hexadecimal Hs Ls Values
24 CPI Subscript			0 00 - 0 65	00 00 - 00 41
20 CPI Subscript	0 00 - 0 78	00 00 - 00 4E	0 66 - 0 77	00 42 - 00 4D
17.1 CPI Normal	0 79 - 0 90	00 4F - 00 5A	0 78 - 0 89	00 4E - 00 59
15 CPI Normal	0 91 - 0 108	00 5B - 00 6C	0 90 - 0 107	00 5A - 00 6B
12 CPI Normal	0 109 - 0 132	00 6D - 00 84	0 108 - 0 131	00 6C - 00 83
10 CPI Normal	0 133 -0 0156	00 85 - 00 9C	0 132 - 0 155	00 84 - 00 9B
8.5 CPI (17.1 CPI double-wide)	0 157 - 0 180	00 9D - 00 B4	0 156 - 0 179	00 9C - 00 B3
7.5 CPI (15 CPI double-wide)	0 181 - 0 216	00 B5 - 00 D8	0 180 - 0 215	00 B4 - 00 D7
6 CPI (12 CPI double-wide, double-high)	0 217 - 1 8	00 D9 - 01 08	0 216 - 0 254	00 D8 - 00 FE
5 CPI (10 CPI double-wide, double-high)	1 9 - 255 255	01 09 - FF FF	0 255 - 255 255	00 FF - FF FF

Note: There are subtle differences between the 258X and 259X printers. This is intentional, not a typo.

Select Print Type Style

This command selects the following printing modes:

- Character height - single or double
- Character width - single or double
- Line Spacing - single or double
- Italic print
- Shadow print (259x only)
- Outline print (259x only)

Format	ESC	[	@	**n1**	**n2**	**m1**	**m2**	**m3**	**m4**
Decimal	27	91	64	**n1**	**n2**	**m1**	0	**m3**	**m4**
Hexadecimal	1B	5B	40	**n1**	**n2**	**m1**	00	**m3**	**m4**

USAGE NOTES

- n1 and n2 specify the number of mode bytes contained in this escape sequence. Normally, n1 is 4, and n2 is 0.
- Normally, m2 is 0 (Dec) 00 (Hex). (Not supported)
- m1 controls start and stop of the character modes. See the table below for values.
- m3 controls line spacing and character height. It as two parts: a high-order half-byte and a low-order half-byte. The high-order half-byte of m3 controls the line spacing and the low-order half-byte controls the character height. See the table below for values.
- m4 controls the character width. Only the low-order half-byte is significant in this mode byte. The high-order half-byte is ignored. See the table below for values.

See the following table for m1, m3, and m4 values.

Table 2-13: Select Print Type Style Values

Variable	Decimal	Hexadecimal	Description	
m1	0	00	No change	
	1	01	Start Italic Print	
	2	02	Stop Italic Print	
	4	04	Start Outline Print (259X only)	
	8	08	Stop Outline Print (259X only)	
	16	10	Start Shadow Print (259X only)	
	32	20	Stop Shadow Print (259X only)	
m3			**Chracter Height**	**Line Space**
	0	00	Unchanged	Unchanged
	16	10	Unchanged	Single
	32	20	Unchanged	Double
	1	01	Single	Unchanged
	17	11	Single	Single
	33	21	Single	Double
	2	02	Double	Unchanged
	18	12	Double	Single
	34	22	Double	Double
m4	0	01	Unchanged	
	1	01	Single	
	2	02	Double	

Select 12 cpi

This command sets the pitch at 12 cpi.

Format   ESC   :
Decimal   27   58
Hexadecimal   1B   3A

Select/Cancel Emphasized Mode

This command selects and cancels the emphasized mode.

To select emphasized mode:

Format	ESC	E
Decimal	27	69
Hexadecimal	1B	45

To cancel emphasized mode:

Format	ESC	F
Decimal	27	70
Hexadecimal	1B	46

Select/Cancel Double-Strike Mode

This command selects and cancels the double-strike mode.

Double-strike print results in a darker print because the printhead strikes the character twice.

To select double-strike mode:

Format	ESC	G
Decimal	27	71
Hexadecimal	1B	47

To cancel double-strike mode:

Format	ESC	H
Decimal	27	72
Hexadecimal	1B	48

Start Superscript or Subscript Printing

This command selects the subscript and superscript modes.

Format	ESC	S	**n**
Decimal	27	83	**n**
Hexadecimal	1B	53	**n**

USAGE NOTE

The value of n can be either of the following:

- 1 (dec) 01 (hex) = Subscript ON
- 0 (dec) 00 (hex) = Superscript ON

Cancel Superscript and Subscript Printing

This command cancels the subscript and superscript modes.

Format	ESC	T
Decimal	27	84
Hexadecimal	1B	54

Score Select (259X only)

For 259x printers only.

This command selects forms of overscore, underscore, and strikethrough.

Format	ESC	[	-	**n1**	**n2**	**m1**	**m2**
Decimal	27	91	45	**n1**	**n2**	**m1**	**m2**
Hexadecimal	1B	5B	2D	**n1**	**n2**	**m1**	**m2**

USAGE NOTES

To cancel this command, designate type as Dec 255 or ex FF.

- n1 and n2 specify the number of parameter bytes contained in this escape sequence. Normally, n1 is 2, and n2 is 0.
- m1 selects score location as follows:
    - 1 (dec) 01 (hex) equals Underscore
    - 2 (dec) 02 (hex) equals Strikethrough

- – 3 (dec) 03 (hex) equals Overscore
- m2 selects score type as follows:
  - – 0 (dec) 00 (hex) equals Cancel
  - – 1 (dec) 01 (hex) equals Single
  - – 2 (dec) 02 (hex) equals Double

Continuous Underscore

This command begins and ends continuous underscore of spaces and characters.

To begin Continuous Underscore:

Format	ESC	-	**n**
Decimal	27	45	**n**
Hexadecimal	1B	2D	**n**

USAGE NOTE

- The value of n can be either of the following:
  - – 1 (dec) 01 (hex) = Underscore ON
  - – 0 (dec) 00 (hex) = Underscore OFF

Continuous Overscore

This command begins and ends continuous overscore of spaces and characters.

To begin Continuous Overscore:

Format	ESC	_	**n**
Decimal	27	95	**n**
Hexadecimal	1B	5F	**n**

USAGE NOTE

- The value of n can be either of the following:
  - – 1 (dec) 01 (hex) = Overscore ON
  - – 0 (dec) 00 (hex) = Overscore OFF

Graphics Commands

Normal Density Bit Image Graphics (60 dpi)

This command sends normal density bit images to be printed at 60 dots per inch (dpi) horizontally and 72 dpi vertically.

Format	ESC	K	**Ln**	**Hn**	**V1**	**...**	**Vn**
Decimal	27	75	**Ln**	**Hn**	**V1**	**...**	**Vn**
Hexadecimal	1B	4B	**Ln**	**Hn**	**V1**	**...**	**Vn**

USAGE NOTES

- The command discards all data that goes beyond the current margin.

- Text and graphics can be printed on the same line.

- Count the total number of bytes of binary bit-image data (A). The total number of bytes cannot exceed the number of dot columns that remain on the line. This value is represented by Ln and Hn.

  - When a value is represented by two parameter bytes, value (A) = Ln + Hn X 256. Calculate values of A less than 256.
    - Hn is 0.
    - Ln is the value.
  - To calculate values of A equal to or greater than 255.
    - Divide the value A by 256.
    - The result is Hn.
    - The remainder is Ln.

- V1 though Vn represent graphics data.

Each vertical dot column can have 8 rows of dots.

To print bit image graphics, the printer uses either the first 8 (258x) or 20 (259x) wires of the printhead to map the eight bits of data.

The following table shows how the print wires are mapped for the 258X printers.

Table 2-14: Print Wire Mapping (258X only)

Dot Position	Bit Number	Decimal	Hexadecimal
Top			

Table 2-14: Print Wire Mapping (258X only)

Dot Position	Bit Number	Decimal	Hexadecimal
	7	128	80
	6	64	40
	5	32	20
	4	16	10
	3	8	08
	2	4	04
	1	2	02
	0	1	01
Bottom			

The following table shows how the print wires are mapped for the 259X printers.

Table 2-15: Print Wire Mapping (259X only)

Dot Position	Bit Number	Decimal	Hexadecimal	
Top				
	7	128	80	1, 2 If dots 7 and 6 print, wire 3 is also used.
	6	64	40	4, 5
	5	32	20	6, 7 If dots 5and 4 print, wire 8is also used.
	4	16	10	9, 10
	3	8	08	11, 12 If dots 3 and 2 print, wire 13 is also used.
	2	4	04	14, 15
	1	2	02	16, 17 If dots 1and 0 print, wire 18 is also used.
	0	1	01	19. 20
Bottom				

Dual-Density Bit Image Graphics (Half Speed 120 dpi)

This command sends normal density bit images to be printed at 120 dots per inch (dpi).

Format	ESC	L	**Ln**	**Hn**	**V1**	**...**	**Vn**
Decimal	27	76	**Ln**	**Hn**	**V1**	**...**	**Vn**
Hexadecimal	1B	4C	**Ln**	**Hn**	**V1**	**...**	**Vn**

- The command discards all data that goes beyond the current margin.
- Text and graphics can be printed on the same line.
- Each vertical dot column can have 8 rows of dots.
- Dual-density graphics print at half-speed of normal-density bit image graphics.
- ESC L dual-density bit image graphics can print adjacent dots.
- See "Normal Density Bit Image Graphics (60 dpi)" on page 2-32 for more information on bit image graphics.

Dual-Density Bit Image Graphics (Normal Speed 120 dpi)

This command sends bit images to be printed at a horizontal resolution of 120 dots per inch (dpi).

Format	ESC	Y	**Ln**	**Hn**	**V1**	**...**	**Vn**
Decimal	27	89	**Ln**	**Hn**	**V1**	**...**	**Vn**
Hexadecimal	1B	59	**Ln**	**Hn**	**V1**	**...**	**Vn**

USAGE NOTES

- The command discards all data that goes beyond the current margin.
- Text and graphics can be printed on the same line.
- Each vertical dot column can have 8 rows of dots.
- ESC Y dual-density graphics print at normal speed.
- ESC Y dual-density graphics cannot print horizontally adjacent dots.
- See "Normal Density Bit Image Graphics (60 dpi)" on page 2-32 for more information on bit image graphics.

High-Density Bit Image Graphics (240 dpi)

This command sends bit images to be printed at a horizontal resolution of 240 dots per inch (dpi).

Format	ESC	Z	**Ln**	**Hn**	**V1**	**...**	**Vn**
Decimal	27	90	**Ln**	**Hn**	**V1**	**...**	**Vn**
Hexadecimal	1B	5A	**Ln**	**Hn**	**V1**	**...**	**Vn**

USAGE NOTES

- The command discards all data that goes beyond the current margin.

- Text and graphics can be printed on the same line.

- Each vertical dot column can have 8 rows of dots.

- ESC Z high-density graphics print at half-speed of normal-density bit image graphics.

- ESC Z high-density graphics cannot print horizontally adjacent dots.

- See "Normal Density Bit Image Graphics (60 dpi)" on page 2-32 for more information on bit image graphics.

High Resolution Graphics (259x only)

For 259x printers only.

This command sends data for dot matrix graphics to the printer.

Format	ESC	[	g	**Ln**	**Hn**	**m**	**V1**	**...**	**Vn**
Decimal	27	91	103	**Ln**	**Hn**	**m**	**V1**	**...**	**Vn**
Hexadecimal	1B	5B	67	**Ln**	**Hn**	**m**	**V1**	**...**	**Vn**

USAGE NOTES

- This command allows selection of eight modes for both emulated 8-wire graphics and 24-wire graphics.

- Count the total number of bytes of binary bit-image data PLUS ONE (A). The total number of bytes cannot exceed the number of dot columns that remain on the line. This value is represented by Ln and Hn.

    - When a value is represented by two parameter bytes, value (A) = Ln + Hn X 256. Calculate values of A less than 256.
    - Hn is 0.
    - Ln is the value.
    - To calculate values of A equal to or greater than 255.
    - Divide the value A by 256.
    - The result is Hn.
    - The remainder is Ln.

- V1 though Vn represent graphics data.

- m is a one-byte value to select the graphics mode. The following modes are supported:

Table 2-16: High Resolution Graphics m parameter values

Decimal	Hexadecimal	Horizontal Density	Wire	Comments
0	00	60	8	Same as ESC K graphics command
1	01	120	8	Same as ESC L graphics command
2	02	120	8	Same as ESC Y graphics command
3	03	240	8	Same as ESC Y graphics command
8	08	60	24	High resolution for ESC K
9	09	120	24	High resolution for ESC L
11	0B	180	24	
12	0C	360	24	
13	0D	120	48	
14	0E	180	48	
16	10	360	48	

Note:
The graphics data is organized by byte. For 8-wire modes, it is arranged and mapped to the wires identically to ESC K. For 24-wire modes, the data has three bytes per slice, with the most significant bit of he first byte mapping to the top wire and the least significant bit to of the third byte mapping to the bottom wire. The slices are in sequence from left to right.

Modes 2,3 and 12 use consecutive dot elimination. No two adjacent horizontal dots can be printed. The second is eliminated. For high resolution mode (8,9,11 and 12), the count should be: 1+(3 number of slices).

For 48-wire modes, the data has six bytes per slice.
However the 48-wire image is mapped to the 24-wire head by ORing bits 1 and 2 to wire 1, bit 3 and 4 to wire 2, and so on.

Set Graphics Line Spacing (n/216")

This command sets line spacing to n/216 inches. It does not cause the form to move. It changes the vertical distance moved when a line feed command is received.

Format	ESC	3	**n**
Decimal	27	51	**n**
Hexadecimal	1B	33	**n**

USAGE NOTES

- Valid values for n are 1 through 255 (decimal), 01 through FF (hexadecimal).

- n must be a multiple of 3 to advance exactly n/216 inches.

- 259x printers only - The units used by ESC 3 can be changed by ESC [\ Set Vertical Units.

Graphics Variable Line Spacing (n/216")

Advances the paper in a vertical movement a distance of n/216 inches relative to the current print position.

Format	ESC	J	**n**
Decimal	27	74	**n**
Hexadecimal	1B	4A	**n**

USAGE NOTES

- Valid values for n are 1 through 255 (decimal), 01 through FF (hexadecimal)..

- 259x printers only - The units used in ESC J can be changed by ESC [\ Set Vertical Units.

- n must be a multiple of 3 to advance exactly n/216 inch.

Bar Code Commands

Setup Barcode Parameter

This command sets the barcode parameters to the printer.

Format	ESC	[	f	n1	n2	k	m	s	V1	V2	c
Decimal	27	91	102	6	0	k	m	s	V1	V2	
Hexadecimal	1B	5B	66	06	00	k	m	s	V1	V2	

USAGE NOTES

- The printer must receive this command prior to the barcode data command. The printer may ignore this command when the received parameters include undefined data.

- The latest barcode command cancels all previous commands.

- n1 and n2 specify command length. n1 is always 6 (dec), 06 (hex). n2 is always 0 (dec), 00 (hex).

- k specifies the barcode type . See "Barcode Types" on page 2-38.

- m specifies the module width. See "Barcode Module Width" on page 2-39.

- The variable s denotes the space width adjustment and affects the barcode printing width. "s" specifies space width adjustment and is used for each 'spaces' to match optical conditions. There is no effect for the 'bar' width adjustment. The s parameter is ignored in Post-Net. See remarks in this section for definition of 'space' and 'bar'. See "Adjustment Unit" on page 2-39.

- V1 and V2 specify bar length (2 bytes). See "Barcode Length" on page 2-40.

- c specifies control flag. See "Barcode Control Flag" on page 2-41.

Barcode Types

The following values are valid for k:

Table 2-17: Barcode Types

Decimal	Hexadecimal	Barcode
177	B1	NW7
178	B2	EAN-13
179	B3	EAN-8

Table 2-17: Barcode Types (Continued)

Decimal	Hexadecimal	Barcode
180	B4	CODE 39
181	B5	INDUSTRIAL 2 of 5
182	B6	INTERLEAVED 2 of 5
183	B7	UPC-A
184	B8	UPC-E
185	B9	POST-NET (barcode)
186	BA	CODE 128

Barcode Module Width

The suggested values for m are as follows:

Table 2-18: Barcode Module Width

m		Unit Module Dots	Width	
Decimal	Hexadecimal		(259X) 24 wire	(258X) 9 wire
0	00	default (2 dots)	0.015 in.	0.021 in.
1 *	01*	2 dots	0.012 in.	0.017 in.
2	02	2 dots	0.015 in.	0.021 in.
3	03	3 dots	0.021 in.	0.030 in.
4	04	4 dots	0.026 in.	0.038 in.

Notes:
* When m = 1, human readable flag is always ignored, and its character is not printed.

In case of "Post-Net", this value only affects bar-width and does not affect bar-pitch.

When m = 1, the barcode prints by 1/360 or 1/240 full dot method. For all other values, the barcode prints by half dot method.

Module width values are nominal values.

Adjustment Unit

24 wire printers (259X) 1=1/360 in.

9 wire printers (258X) 1=1/240 in

Adjustment Values are:

Table 2-19: Barcode Space Width Adjustment

s	Decimal	Hexadecimal
-3	253	FD
-2	254	FE
-1	255	FF
0	0	00 (default)
1	1	01
2	2	02
3	3	03
Note: Undefined s value is handled as default value.		

Barcode Type	BAR	SPACE
NW-7	4	3
EAN/UPC-A	2	2
CODE 39	5	4 + 1 Gap
Interleaved 2 of 5	5	5
CODE 128	3	3

"s" value affects barcode printing width. If barcode printing area reaches to the right or left margin, the printer ignores this command.

Barcode Length

The variables v1 and v2 control the bar length. V1 specifies lower byte. V2 specifies upper byte. Bar length is controlled by multiple value of a unit of 1/2160 inch.

Values for V1, V2 are:

Table 2-20: Barcode Length

		V1, V2 value			
	Model	Decimal	Hexadecimal		
minimum values	24 wire (259X)	288	120		
	9 wire (248X)	270	10E		

Table 2-20: Barcode Length (Continued)

		V1, V2 value			
	Model	**Dec**	**Hex**	**Vertical Pitch**	
all barcodes except Post-Net [a]	24 wire (259X)	12	0C	1/180 inch	
	9 wire (248X)	30	1E	1/72 inch	
	Model	**Dec**	**Hex**	**long bar height**	**short bar height**
Post-Net [b]	24 wire (259X)	288	120	24/180 inch	8/180 inch
	9 wire (248X)	270	10E	18/144 inch	6/144 inch

a. All the input data is rounded to the multiple value shown.
b. Barcode height is fixed to the values shown.

Barcode Control Flag

The control flag is made up of 8 bits as follows:

Table 2-21: Barcode Control Flags

Bit	Description	Decimal	Hexadecimal	Effect
b1	Check Digit	0	00	No check code is generated by the printer. The host computer should generate the check code.
		1	01	Check code is generated automatically by the printer.
b2	Human Readable Character	0	00	Print On
		1	01	Print Off
b3	EAN-13 (13th digit), UPC-A (number system character) flag character position	0	00	Center
		1	01	Under
b4-b8	not used			

Setup Barcode Data

This command sets the barcode data on the current printing position.

Format	ESC	[	p	**n1**	**n2**	**d1**	**d2**
Decimal	27	91	112	**n1**	**n2**	**d1**	**d2**
Hexadecimal	1B	5B	70	**n1**	**n2**	**d1**	**d2**

USAGE NOTES

- The printer must receive the Setup command ESC [f prior to the ESC [p command.

- The barcode prints after the printer receives the LF line feed command.

- The printer may ignore this command in the following conditions:

    – The barcode print area exceeds the left or right margin.
    – The barcode print area exceeds the page margin.
    – Undefined data is included in the command. In this case, the command strings defined "n1,n2" are ignored.

- n1 and n2 specify:

    – n1, n2 show data quantity following ESC [p n1, n2.
    – n1 is a low byte of command length data in hexadecimal.
    – n2 is a high byte of command length data in hexadecimal.
    – If an undefined value is found in the data string, the printer will ignore all the received barcode data with a length defined as n1, n2.
    – Valid n1, n2 values are listed in the following table:

Table 2-22: Barcode Data n1, n2 values

n1 (low byte) OFF[a]		n1 (low byte) ON[b]		n2 (high byte)[c]		
Decimal	Hexadecimal	Decimal	Hexadecimal	Decimal	Hexadecimal	Barcode Style
13	0D	12	0C	0	00	EAN-13
8	08	7	07	0	00	EAN-8
1 to 255	01 to FF	1 to 255	01 to FF	0	00	CODE 39
1 to 255	01 to FF	1 to 255	01 to FF	0	00	INTERLEAVED 2 of 5
12	0C	11	0B	0	00	UPC-A
10	0A	9	09	0	00	POST-NET
2 to 255	02 to FF	2 to 255	02 to FF	0	00	CODE 128

a. Automatic check digit generation flag is OFF.
b. Automatic check digit generation flag is ON.
c. The value of n2 does not change based on the check digit generation flag status.

CHAPTER 3: Epson Emulation Mode Printer Commands

change

This section provides a detailed description of Epson emulation mode commands you can use with your printer.

Control Codes

Control codes are one-character printer commands that are used to:

- Manage the printing of a job.
- Control the movement of the cursor, which changes the current print position.
- Control secondary font selection, such as condensed and double-wide.

The first 32 characters of the Standard ASCII table are control codes. This printer uses the following control codes.

Table 3-1: Control Codes

Code Name	Symbol	Description	Value (Dec)	Value (Hex)
Beeper	BEL	Sounds the printer beeper for approximately 1 second.	7	07
Backspace	BS	Causes the printer to move the current print position one character position to the left, but not beyond the left margin setting.	8	08
Cancel Line	CAN	All data in the print buffer is cancelled. Does not affect control codes.	24	18
Carriage Return	CR	Moves the current print position to the left margin of the current line.	13	0D

Table 3-1: Control Codes (Continued)

Code Name	Symbol	Description	Value (Dec)	Value (Hex)
Select Printer	DC1	Selects the printer, causing all subsequent data to be accepted. Returns the printer to the select state if it has been deselcted by the Deselect Printer code (DC3). Does not select the printer if it has been switched off line by pressing the start/stop key.	17	11
Cancel Condensed Mode	DC2	Cancels condensed printing set by SI, ESC SI or ESC!.	18	12
Deselect Printer	DC3	Puts the printer into the deselected state until the Select Printer code (DC1) is received. The printer cannot be reselected with the start/stop key.	19	13
Cancel Double-Wide Printing by Line	DC4	Cancels double-width printing mode set by SO or ESC SE,but does not cancel the double-wide mode selected by ESC W or ESC !. Returns printing to normal.	20	14
Form Feed	FF	Advances the paper to the top of the next page and does a carriage return.	12	0C
Horizontal Tab	HT	Moves the print head to the next horizontal tab position specified by the ESC D command. If no tab position is set or programmed, tabs are set by default to every 8th column, beginning at column 9. When no tab is set between the current position and the right margin or if the tabs are all cleared, the code is ignored.	9	09
Line Feed	LF	Advances the paper one line on the page. An automatic carriage return may be optionally disabled.	10	0A
Null	NUL	Null	0	00
Condensed Printing	SI	Condenses printing from 10 characters per inch (cpi) to 17.1 and 12 cpi to 20. Proportional mode cannot be condensed.	15	0F
Double-Wide Printing by Line	SO	Prints all characters in double-width mode. This mode is canceled by the receipt of ESC !, ESC W n, LF, VT, FF, DC4 or auto wrap.	14	0E
Space	SP	Moves print position one print column to the right	32	20
Vertical Tab	VT	Advances the paper to the next vertical tab position set by the ESC B command. If no tab position is set, the printer performs a single line feed. If the next vertical tab position is greater than the form length (or form length minus skip perforation), the VT does a line feed. An automatic carriage return may be optionally disabled	11	0B

Escape Sequences

An escape sequence (two or more characters of information) lets you change the way the printer is currently printing. Like a control code, it gives you control over the printed output. The escape sequence begins with the character ESC (decimal 027, hexadecimal 1B). The printer recognizes this character as the beginning of a printer command signaling that the information following is control information and not data to be printed.

Printer Command Parameters

A command parameter sets the value for a command. This value stays constant until either a different value resets the command or a command resets the printer to its default values. For example, after the printer receives a command that selects a right margin beginning at column 63, the right margin of each printed page begins at column 63. The margin remains constant until a right margin command with a different value resets the margin, or the printer is reset.

In this section, command parameters are indicated by a lowercase **n**. Usage Notes explain how to compute this parameter.

Command Structure

Data is pending.

Example of Epson Emulation Mode Printer Command

Data is pending.

Printer Command Quick Reference (Epson Emulation Mode)

Data is pending.

General Printer Commands

The following are general Printer Commands.

Set Print Direction

This command sets the printer to print either unidirectional (left to right) printing or returns to bi-directional printing.

Format	ESC	U	**n**
Decimal	27	85	**n**
Hexadecimal	1B	55	**n**

USAGE NOTE

The value of n can be either of the following:

- 1 (dec) 01 (hex) = Unidirectional
- 0 (dec) 00 (hex) = Bi-directional

Continuous Double-Wide Printing

This command selects or cancels a double-wide printing mode that is not canceled by line feed terminators.

Format	ESC	W	**n**
Decimal	27	87	**n**
Hexadecimal	1B	57	**n**

USAGE NOTE

The value of n can be either of the following:

- 1 (dec) 01 (hex) = Selects double-wide printing mode
- 0 (dec) 00 (hex) = Cancels double-wide printing mode

Print Position Commands

Perform Line Feed

Advances the paper as follows:

n/216 inch (258X only)

n/180 inch (259X only)

Format	ESC	J	**n**
Decimal	27	74	**n**
Hexadecimal	1B	4A	**n**

USAGE NOTES

The value of n must be from 0 and 255.

Reverse Line Feed

This command feeds the paper one line in the reverse direction as follows:

n/216 inch (258X only)

n/180 inch (259X only)

Format	ESC	j	**n**
Decimal	27	106	**n**
Hexadecimal	1B	6A	**n**

USAGE NOTES

The value of n must be from 0 and 255.

Caution: This command is not recommend. Repetitive use of this command can cause a paper jam.

Select 1/8" Line Spacing

This command (ESC zero) sets the line spacing at 1/8 inch between each line, which is 8 lines per inch (lpi).

Format	ESC	0
Decimal	27	48
Hexadecimal	1B	30

Select 7/72" Line Spacing

This command sets the line spacing at 7/72 inch between each line, which is 10.3 lpi.

Format	ESC	1
Decimal	27	49
Hexadecimal	1B	31

Select 1/6" Line Spacing

This command sets the line spacing at 1/6 inch between each line, which is 6 lines per inch (lpi).

Format	ESC	2
Decimal	27	50
Hexadecimal	1B	32

Set n/72" Line Spacing

This command sets line spacing in n/72 inch increments for subsequent line feed commands.

Format	ESC	A	**n**
Decimal	27	65	**n**
Hexadecimal	1B	41	**n**

USAGE NOTE

Valid values for n are 1 through 85 (decimal), 01 through 55 (hexadecimal).

Set n/360" Line Spacing (259X Only)

This command sets line spacing in n/360 inch increments for subsequent line feed commands.

Format	ESC	+	**n**
Decimal	27	43	**n**
Hexadecimal	1B	2B	**n**

USAGE NOTE

Valid values for n are 1 through 255 (decimal), 01 through FF (hexadecimal).

Page/Form Layout Commands

Set Horizontal Tabs

This command sets up to 32 horizontal tabs to be used with the printer command HT, Horizontal Tabulation.

Format	ESC	D	**n1**	**...**	**n32**	0
Decimal	27	68	**n1**	**...**	**n32**	0
Hexadecimal	1B	44	**n1**	**...**	**n32**	00

USAGE NOTES

- Set the tabulation stops in ascending order (n1.....n32).
- The last digit in the sequence must be 0 to terminate the command.
- Horizontal tabs are specified by column number. The left most column is numbered one.
- ESC D 0 clears all existing horizontal tab stops.
- The printer command HT, Horizontal Tabulation, activates the tabulation stops set by this Escape sequence.

Set Vertical Tabs

Sets as many as 16 vertical tabulation stops.

Format	ESC	B	**n1**	**...**	**n16**	0
Decimal	27	66	**n1**	**...**	**n16**	0
Hexadecimal	1B	44	**n1**	**...**	**n16**	00

USAGE NOTES

- Set the tabulation stops in ascending order (n1.....n16).
- The last digit in the sequence must be 0 to terminate the command.
- Tab settings are not affected by subsequent change of line spacing.
- ESC B 0 clears all vertical tab stops.
- All settings are stored in channel 0.
- The printer command VT, Vertical Tabulation activates the tabulation stops set by this escape sequence.

Set Vertical Tabs in Channels

Sets as many as 16 vertical tabulation stops in one of eight channels (0-7).

Format	ESC	b	**m**	**n1**	...	**n16**	0
Decimal	27	98	**m**	**n1**	...	**n16**	0
Hexadecimal	1B	62	**m**	**n1**	...	**n16**	00

USAGE NOTES

- Tab settings are stored in channel m.
- The value of m must be from 0 to 7. Tabs may be set for channel 0 using the ESC B command.
- Set the tabulation stops in ascending order (n1.....n16).
- The last digit in the sequence must be 0 to terminate the command.
- Tab settings are not affected by subsequent change of line spacing.
- ESC b m 0 clears all vertical tab stops.
- The channels are selected by the ESC / command.
- The printer command VT, Vertical Tabulation activates the tabulation stops set by this escape sequence.

Select Vertical Tab Channel

Selects the vertical tab channel.

Format	ESC	/	**n**
Decimal	27	47	**n**
Hexadecimal	1B	2F	**n**

USAGE NOTES

- Selects one of eight channels containing vertical tab stops.
- Tabs are set using the ESC b command.
- The value of n must be from 0 to 7.

Set Left Margin

This command (ESC l - lower case L) sets the left margin to n column in the current character size. A setting made in the proportional mode is regarded as 10 cpi.

Format	ESC	l	**n**
Decimal	27	108	**n**
Hexadecimal	1B	6C	**n**

USAGE NOTES

- n selects the margin position.
- Margin = n(character) x cpi.

Set Right Margin

This command sets the right margin to n column in the current character size. A setting made in the proportional mode is regarded as 10 cpi.

Format	ESC	Q	**n**
Decimal	27	81	**n**
Hexadecimal	1B	51	**n**

USAGE NOTES

- n selects the margin position.
- Margin = n(character) x cpi.

Set Automatic Perforation Skip

This command specifies the number of lines to be skipped at the bottom of each page, which creates a bottom margin.

Format	ESC	N	**n**
Decimal	27	78	**n**
Hexadecimal	1B	4E	**n**

USAGE NOTES

- This command remains in effect until:
  - Cancel Skip Perforation (ESC O) printer command is received.
  - Set Form Length in Lines (ESC C) printer command is received.

–   Set Form Length in Inches (ESC C 0) printer command is received.

●   Valid values for n are 1 through 255 (decimal), 01 through FF (hexadecimal).

Cancel Automatic Perforation Skip

This command cancels Set Automatic Perforation Skip (ESC N).

Format	ESC	O
Decimal	27	79
Hexadecimal	1B	4F

Proportional Space Mode

This command turns proportional space mode on and off.

Format	ESC	p	**n**
Decimal	27	112	**n**
Hexadecimal	1B	70	**n**

USAGE NOTES

●   The value of n can be either of the following:

–   1 (dec) 01 (hex) = ON
–   0 (dec) 00 (hex) = OFF

●   (259x only) ON changes character pitch to the LQ proportional mode. OFF returns character pitch in LQ mode to the pitch selected before the proportional space mode was turned on.

Set Form Length in Inches

This command sets the form length to a specified number of inches.

Format	ESC	C	00	**n**
Decimal	27	67	00	**n**
Hexadecimal	1B	43	00	**n**

USAGE NOTES

●   Valid values for n are 1 through 22 (decimal), 01 through 16 (hexadecimal).

- When the command is sent, the current vertical position becomes the new top of form.

- Automatic Perforation Skip is canceled.

Set Form Length in Lines

This command sets the form length to a specified number of lines.

Format	ESC	C	**n**
Decimal	27	67	**n**
Hexadecimal	1B	43	**n**

USAGE NOTES

- Valid values for n are 1 through 127 (decimal), 01 through 7F (hexadecimal), and works in conjunction with the current line spacing (ESC A).

- When the command is sent, the current vertical position becomes the new top of form.

- Automatic Perforation Skip is canceled.

Character Commands

Select Character Set

This command is required to define the character set.

Format	ESC	%	**n**
Decimal	27	37	**n**
Hexadecimal	1B	25	**n**

USAGE NOTES

- n = 0 (dec) 00 (hex) selects normal character set
- n = 1(dec) 01 (hex) selects user-defined character set

Printable Code Area Expansion (259X Only)

This command (ESC I - upper case i) allows non-printable (ASCII codes 0 to 31 and 128 to 159) codes to be used for user-defined characters.

Format	ESC	I	**n**
Decimal	27	73	**n**
Hexadecimal	1B	49	**n**

USAGE NOTES

- n = 0 (dec) 00 (hex) cancels expansion
- n = 1(dec) 01 (hex) selects expansion

Select an International Character Set

This command selects the desired international character set.

Format	ESC	R	**n**
Decimal	27	27	**n**
Hexadecimal	1B	52	**n**

USAGE NOTE

Valid values of n are as follows:

Decimal	Hexadecimal	Country
0	00	USA
1	01	France
2	02	Germany
3	03	United Kingdom
4	04	Denmark
5	05	Sweden
6	06	Italy
7	07	Spain 1
8	08	Japan
9	09	Norway
10	0A	Denmark 2
11	0B	Spain 2
12	0C	Latin America
13	0D	Korea (259X Only)
64	40	Legal (259X Only)

Code Page Commands

Style Commands

Set Print Quality

This command changes the print quality.

Format	ESC	x	**n**
Decimal	27	120	**n**
Hexadecimal	1B	78	**n**

USAGE NOTE

Valid values of n are as follows:

Printer Model	Decimal	Hexadecimal	Quality
258X	0	00	Draft
	1	01	Near Letter Quality (NLQ)
259X	0	00	Draft
	1	01	Letter Quality (LQ)

Select Typestyle Family

This command selects the desired typestyle.

Format	ESC	k	**n**
Decimal	27	107	**n**
Hexadecimal	1B	6B	**n**

USAGE NOTES

Valid values of n are as follows:

Printer Model	Decimal	Hexadecimal	Typestyle
258X	Near Letter Quality (NLQ) - (not Draft)		
	0	00	Courier
	1	01	Gothic

Printer Model	Decimal	Hexadecimal	Typestyle
259X	Letter Quality (LQ) - (not Draft)		
	0	00	Prestige
	1	01	Gothic
	2	02	Courier
	3	03	Prestige
	4	04	Script
	5	05	Gothic
	6	06	Gothic
	7	07	Orator
	8	08	Presentor

Select Character Style (259X Only)

This command (ESC q - lower case Q) selects character styles.

Format	ESC	q	**n**
Decimal	27	113	**n**
Hexadecimal	1B	71	**n**

USAGE NOTES

- This command is valid for all characters with the exception of the follwowing character codes in the Graphics character table:
  Dec 176 to 223, 244, 245
  Hex B0 to DF, F4, F5

- Valid values of n are as follows:

Decimal	Hexadecimal	Character Style
0	00	Normal
1	01	Outline
2	02	Shadow
3	03	Outline with shadow

Select 12 cpi

This command sets the pitch at 12 cpi.

Format	ESC	M
Decimal	27	77
Hexadecimal	1B	4D

Select 10 cpi

This command sets the pitch at 10 cpi and cancels 12 cpi and 15 cpi.

Format	ESC	P
Decimal	27	80
Hexadecimal	1B	50

Select/Cancel Emphasized Mode

This command selects and cancels the emphasized mode.

To select emphasized mode:

Format	ESC	E
Decimal	27	69
Hexadecimal	1B	45

To cancel emphasized mode:

Format	ESC	F
Decimal	27	70
Hexadecimal	1B	46

Select/Cancel Double-Strike Mode

This command selects and cancels the double-strike mode.

Double-strike print results in a darker print because the printhead strikes the character twice.

To select double-strike mode:

Format	ESC	G
Decimal	27	71
Hexadecimal	1B	47

To cancel double-strike mode:

Format	ESC	H
Decimal	27	72
Hexadecimal	1B	48

Start Superscript or Subscript Printing

This command selects the subscript and superscript modes.

Format	ESC	S	**n**
Decimal	27	83	**n**
Hexadecimal	1B	53	**n**

USAGE NOTE

The value of n can be either of the following:

- 1 (dec) 01 (hex) = Subscript ON
- 0 (dec) 00 (hex) = Superscript ON

Cancel Superscript and Subscript Printing

This command cancels the subscript and superscript modes.

Format	ESC	T
Decimal	27	84
Hexadecimal	1B	54

Score Select (259X only)

For 259x printers only.

This command selects forms of overscore, underscore, and strikethrough.

Format	ESC	(	-	**n1**	**n2**	**m**	**d1**	**d2**
Decimal	27	40	45	3	0	1	**d1**	**d2**
Hexadecimal	1B	5B	2D	03	00	01	**d1**	**d2**

USAGE NOTES

- The values of n1, n2 and m are 3, 0, 1 (dec) and 03, 00, 01 (hex) respectively.

- d1 selects score location as follows:
  - 1 (dec) 01 (hex) = Underscore
  - 2 (dec) 02 (hex) = Strikethrough
  - 3 (dec) 03 (hex) = Overscore

- d2 selects score type as follows:
  - 0 (dec) 00 (hex) = Cancel score line selected by d1
  - 1 (dec) 01 (hex) = Single continuous line
  - 2 (dec) 02 (hex) = Double continuous line
  - 5 (dec) 05 (hex) = Single broken line
  - 6 (dec) 06 (hex) = Double broken line

- The last three bits of d2 determine the characteristics of the score line as follows:

	Bit 2	**Bit 1**	**Bit 0**
On (1)	Broken line	Double line	Single line on
Off (2)	Continuous line	Double line off	Single line off

Note: If bits 1 and 0 are both off, the selected score is canceled. Double line and single line cannot be combined at the same score position.

Continuous Underscore

This command begins and ends continuous underscore of spaces and characters.

Format   ESC   -   **n**

Decimal   27   45   **n**

Hexadecimal   1B   2D   **n**

USAGE NOTE

- The value of n can be either of the following:
  - 1 (dec) 01 (hex) = Underscore ON
  - 0 (dec) 00 (hex) = Underscore OFF

Graphics Commands

Single-Density Bit Image Graphics (60 dpi)

This command sends bit images to be printed at a horizontal resolution of 60 dots per inch (dpi).

Format	ESC	K	**Ln**	**Hn**	**V1**	**...**	**Vn**
Decimal	27	75	**Ln**	**Hn**	**V1**	**...**	**Vn**
Hexadecimal	1B	4B	**Ln**	**Hn**	**V1**	**...**	**Vn**

USAGE NOTES

- The command discards all data that goes beyond the current margin.

- Text and graphics can be printed on the same line.

- Count the total number of bytes of binary bit-image data (A). The total number of bytes cannot exceed the number of dot columns that remain on the line. This value is represented by Ln and Hn.

  – When a value is represented by two parameter bytes, value (A) = Ln + Hn X 256. Calculate values of A less than 256.
  - Hn is 0.
  - Ln is the value.
  – To calculate values of A equal to or greater than 255.
  - Divide the value A by 256.
  - The result is Hn.
  - The remainder is Ln.

- V1 though Vn represent graphics data.

Each vertical dot column can have 8 rows of dots.

To print bit image graphics, the printer uses either the first 8 (258x) or 20 (259x) wires of the printhead to map the eight bits of data.

The following table shows how the print wires are mapped for the 258X printers.

Table 3-2: Print Wire Mapping (258X only)

Dot Position	Bit Number	Decimal	Hexadecimal
Top			

Table 3-2: Print Wire Mapping (258X only)

Dot Position	Bit Number	Decimal	Hexadecimal
	7	128	80
	6	64	40
	5	32	20
	4	16	10
	3	8	08
	2	4	04
	1	2	02
	0	1	01
Bottom			

The following table shows how the print wires are mapped for the 259X printers.

Table 3-3: Print Wire Mapping (259X only)

Dot Position	Bit Number	Decimal	Hexadecimal	
Top				
	7	128	80	1, 2 If dots 7 and 6 print, wire 3 is also used.
	6	64	40	4, 5
	5	32	20	6, 7 If dots 5and 4 print, wire 8is also used.
	4	16	10	9, 10
	3	8	08	11, 12 If dots 3 and 2 print, wire 13 is also used.
	2	4	04	14, 15
	1	2	02	16, 17 If dots 1and 0 print, wire 18 is also used.
	0	1	01	19. 20
Bottom				

Double-Density Bit Image Graphics (120 dpi)

This command sends bit images to be printed at a horizontal resolution of 120 dots per inch (dpi).

Format	ESC	L	**Ln**	**Hn**	**V1**	**...**	**Vn**
Decimal	27	76	**Ln**	**Hn**	**V1**	**...**	**Vn**
Hexadecimal	1B	4C	**Ln**	**Hn**	**V1**	**...**	**Vn**

High-Speed Double-Density Bit Image Graphics (120 dpi)

This command sends bit images to be printed at a horizontal resolution of 120 dots per inch (dpi).

Format	ESC	Y	**Ln**	**Hn**	**V1**	**...**	**Vn**
Decimal	27	89	**Ln**	**Hn**	**V1**	**...**	**Vn**
Hexadecimal	1B	59	**Ln**	**Hn**	**V1**	**...**	**Vn**

USAGE NOTES

- The command discards all data that goes beyond the current margin.

- Text and graphics can be printed on the same line.

- Each vertical dot column can have 8 rows of dots.

- ESC Y dual-density graphics print at normal speed.

- ESC Y dual-density graphics cannot print horizontally adjacent dots.

- See "Single-Density Bit Image Graphics (60 dpi)" on page 3-23 for more information on bit image graphics.

Quadruple-Density Bit Image Graphics (240 dpi)

This command sends bit images to be printed at a horizontal resolution of 240 dots per inch (dpi).

Format	ESC	Z	**Ln**	**Hn**	**V1**	**...**	**Vn**
Decimal	27	90	**Ln**	**Hn**	**V1**	**...**	**Vn**
Hexadecimal	1B	5A	**Ln**	**Hn**	**V1**	**...**	**Vn**

USAGE NOTES

- The command discards all data that goes beyond the current margin.

- Text and graphics can be printed on the same line.

- Each vertical dot column can have 8 rows of dots.

- ESC Z high-density graphics print at half-speed of normal-density bit image graphics.

- ESC Z high-density graphics cannot print horizontally adjacent dots.

- See "Single-Density Bit Image Graphics (60 dpi)" on page 3-23 for more information on bit image graphics.

Select 9-Pin Graphics Mode (258x only)

For 258x printers only.

This command prints 9-pin bit-image data in one of 4 modes.

Format	ESC	^	**m**	**Ln**	**Hn**	**V1**	**...**	**Vn**
Decimal	27	91	**m**	**Ln**	**Hn**	**V1**	**...**	**Vn**
Hexadecimal	1B	5B	**m**	**Ln**	**Hn**	**V1**	**...**	**Vn**

USAGE NOTES

- Bit image data can be mixed with text data on the same line.

- This mode requires **two** bytes of data for each column of print or 'slice'.

- Count the total number of slices of bit-image data (A). This value is represented by Ln and Hn.

  - When a value is represented by two parameter bytes, value (A) = Ln + Hn X 256. Calculate values of A less than 256.
  - Hn is 0.
  - Ln is the value.
  - To calculate values of A equal to or greater than 255.
  - Divide the value A by 256.
  - The result is Hn.
  - The remainder is Ln.

- The final equation can be represented by (n1 + n2 X 256) X 2 bytes/slice.

- V1 though Vn represent graphics data.

- m is a one-byte value to select the graphics mode. The following modes are supported:

Table 3-4: High Resolution Graphics m parameter values

Decimal	Hexadecimal	Horizontal Density	Comments
0	00	60	Single-density
1	01	120	Double-density
2	02	120	High-speed double-density*
3	03	240	Quadruple-density*
Note: * Adjacent dots cannot be printed in these modes.			

Reassign Graphics Mode

This command changes the graphic mode assigned to a graphics mode command.

The ESC ? command utilizes the same mode values of m as the ESC * command. ESC * identifies the available graphics modes and can be used to print bit-image data directly for a single occurrence.

The ESC ? command reassigns one of the standard graphics modes (ESC K, ESC L, ESC Y, or ESC Z) to a value of m normally accessed via the ESC * command. From that point forward the standard command will print in the reassigned mode.

For example: A user wants to print in CRT 1 mode.

- The user could send the ESC * command with an m value of 3 (dec) for a single occurrence in CRT 1 mode.

- The user could send the ESC ? command with an n value of K and an m value of 3 (dec) to reassign the ESC K command to CRT 1 mode. The user would then send the ESC K command to print. From that point forward, ESC K will print in CRT 1 mode.

Format	ESC	?	**n**	**m**
Decimal	27	63	**n**	**m**
Hexadecimal	1B	3F	**n**	**m**

USAGE NOTES

- Valid values for n are K, L, Y and Z, representing the graphics modes discussed on pages 3-23 through 3-25.

- Valid values of m are identified in the ESC * command on page 3-28.

Select Graphics Mode

This command prints bit-image data in one of several modes..

Format	ESC	*	**m**	**Ln**	**Hn**	**V1**	**...**	**Vn**
Decimal	27	42	**m**	**Ln**	**Hn**	**V1**	**...**	**Vn**
Hexadecimal	1B	2A	**m**	**Ln**	**Hn**	**V1**	**...**	**Vn**

USAGE NOTES

- Bit image data can be mixed with text data on the same line.
- Count the total number of bytes of binary bit-image data (A). The total number of bytes cannot exceed the number of dot columns that remain on the line. This value is represented by Ln and Hn.
  - When a value is represented by two parameter bytes, value (A) = Ln + Hn X 256. Calculate values of A less than 256.
    - Hn is 0.
    - Ln is the value.
  - To calculate values of A equal to or greater than 255.
    - Divide the value A by 256.
    - The result is Hn.
    - The remainder is Ln.
- V1 though Vn represent graphics data.
- m is a one-byte value to select the graphics mode. The following modes are supported:

Table 3-5: Graphics Mode m parameter values

Printer	Decimal	Hexadecimal	Horizontal Density	Wires	Comments	Equivalent Command
258X printers	0	00	60	8	Single-density	ESC K
	1	01	120	8	Double-density	ESC L
	2	02	120	8	High-speed double-density*	ESC Y
	3	03	240	8	Quadruple-density*	ESC Z
	4	04	80	8	CRT 1	None
	5	05	72	8	Plotter (1:1)	None
	6	06	90	8	CRT 2	None
	7	07	144	8	Double-density Plotter	None

Table 3-5: Graphics Mode m parameter values (Continued)

Printer	Decimal	Hexadecimal	Horizontal Density	Wires	Comments	Equivalent Command
259X printers	0	00	60	8	Single-density	ESC K
	1	01	120	8	Double-density	ESC L
	2	02	120	8	High-speed double-density*	ESC Y
	3	03	240	8	Quadruple-density*	ESC Z
	4	04	80	8	CRT 1	None
	6	06	90	8	CRT 2	None
	32	20	60	24	Single-density	None
	33	21	120	24	Double-density	None
	38	26	90	24	CRT 3	None
	39	27	180	24	Triple-density	None
	40	28	360	24	Hex-density*	None
Note: * Adjacent dots cannot be printed in these modes.						

Set Graphics Line Spacing

This command sets line spacing to n/216 (258X) or n/180 (259X) inches per line. It does not cause the form to move. It changes the vertical distance moved when a line feed command is received.

Format	ESC	3	**n**
Decimal	27	51	**n**
Hexadecimal	1B	33	**n**

USAGE NOTES

- Valid values for n are 1 through 255 (decimal), 01 through FF (hexadecimal).
- n must be a multiple of 3 to advance exactly n/216 inches.

Bar Code Commands

Setup Barcode Parameter

This command sets the barcode parameters to the printer.

Format	ESC	[	f	n1	n2	k	m	s	V1	V2	c
Decimal	27	91	102	6	0	k	m	s	V1	V2	
Hexadecimal	1B	5B	66	06	00	k	m	s	V1	V2	

USAGE NOTES

- The printer must receive this command prior to the barcode data command. The printer may ignore this command when the received parameters include undefined data.

- The latest barcode command cancels all previous commands.

- n1 and n2 specify command length. n1 is always 6 (dec), 06 (hex). n2 is always 0 (dec), 00 (hex).

- k specifies the barcode type . See "Barcode Types" on page 3-30.

- m specifies the module width. See "Barcode Module Width" on page 3-31.

- The variable s denotes the space width adjustment and affects the barcode printing width. "s" specifies space width adjustment and is used for each 'spaces' to match optical conditions. There is no effect for the 'bar' width adjustment. The s parameter is ignored in Post-Net. See remarks in this section for definition of 'space' and 'bar'. See "Adjustment Unit" on page 3-31.

- V1 and V2 specify bar length (2 bytes). See "Barcode Length" on page 3-32.

- c specifies control flag. See "Barcode Control Flag" on page 3-33.

Barcode Types

The following values are valid for k:

Table 3-6: Barcode Types

Decimal	Hexadecimal	Barcode
177	B1	NW7
178	B2	EAN-13
179	B3	EAN-8

Table 3-6: Barcode Types (Continued)

Decimal	Hexadecimal	Barcode
180	B4	CODE 39
181	B5	INDUSTRIAL 2 of 5
182	B6	INTERLEAVED 2 of 5
183	B7	UPC-A
184	B8	UPC-E
185	B9	POST-NET (barcode)
186	BA	CODE 128

Barcode Module Width

The suggested values for m are as follows:

Table 3-7: Barcode Module Width

m		Unit Module Dots	Width	
Decimal	Hexadecimal		(259X) 24 wire	(258X) 9 wire
0	00	default (2 dots)	0.015 in.	0.021 in.
1 *	01*	2 dots	0.012 in.	0.017 in.
2	02	2 dots	0.015 in.	0.021 in.
3	03	3 dots	0.021 in.	0.030 in.
4	04	4 dots	0.026 in.	0.038 in.

Notes:
* When m = 1, human readable flag is always ignored, and its character is not printed.

In case of "Post-Net", this value only affects bar-width and does not affect bar-pitch.

When m = 1, the barcode prints by 1/360 or 1/240 full dot method. For all other values, the barcode prints by half dot method.

Module width values are nominal values.

Adjustment Unit

24 wire printers (259X) 1=1/360 in.

9 wire printers (258X) 1=1/240 in

Adjustment Values are:

Table 3-8: Barcode Space Width Adjustment

s	Decimal	Hexadecimal
-3	253	FD
-2	254	FE
-1	255	FF
0	0	00 (default)
1	1	01
2	2	02
3	3	03
Note: Undefined s value is handled as default value.		

Barcode Type	BAR	SPACE
NW-7	4	3
EAN/UPC-A	2	2
CODE 39	5	4 + 1 Gap
Interleaved 2 of 5	5	5
CODE 128	3	3

"s" value affects barcode printing width. If barcode printing area reaches to the right or left margin, the printer ignores this command.

Barcode Length

The variables v1 and v2 control the bar length. V1 specifies lower byte. V2 specifies upper byte. Bar length is controlled by multiple value of a unit of 1/2160 inch.

Values for V1, V2 are:

Table 3-9: Barcode Length

		V1, V2 value			
	Model	Decimal	Hexadecimal		
minimum values	24 wire (259X)	288	120		
	9 wire (248X)	270	10E		

Table 3-9: Barcode Length (Continued)

		V1, V2 value			
	Model	**Dec**	**Hex**	**Vertical Pitch**	
all barcodes except Post-Net [a]	24 wire (259X)	12	0C	1/180 inch	
	9 wire (248X)	30	1E	1/72 inch	
	Model	**Dec**	**Hex**	**long bar height**	**short bar height**
Post-Net [b]	24 wire (259X)	288	120	24/180 inch	8/180 inch
	9 wire (248X)	270	10E	18/144 inch	6/144 inch

a. All the input data is rounded to the multiple value shown.
b. Barcode height is fixed to the values shown.

Barcode Control Flag

The control flag is made up of 8 bits as follows:

Table 3-10: Barcode Control Flags

Bit	Description	Decimal	Hexadecimal	Effect
b1	Check Digit	0	00	No check code is generated by the printer. The host computer should generate the check code.
		1	01	Check code is generated automatically by the printer.
b2	Human Readable Character	0	00	Print On
		1	01	Print Off
b3	EAN-13 (13th digit), UPC-A (number system character) flag character position	0	00	Center
		1	01	Under
b4-b8	not used			

Setup Barcode Data

This command sets the barcode data on the current printing position.

Format	ESC	[	p	**n1**	**n2**	**d1**	**d2**
Decimal	27	91	112	**n1**	**n2**	**d1**	**d2**
Hexadecimal	1B	5B	70	**n1**	**n2**	**d1**	**d2**

USAGE NOTES

- The printer must receive the Setup command ESC [f prior to the ESC [p command.

- The barcode prints after the printer receives the LF line feed command.

- The printer may ignore this command in the following conditions:
    - The barcode print area exceeds the left or right margin.
    - The barcode print area exceeds the page margin.
    - Undefined data is included in the command. In this case, the command strings defined "n1,n2" are ignored.

- n1 and n2 specify:
    - n1, n2 show data quantity following ESC [p n1, n2.
    - n1 is a low byte of command length data in hexadecimal.
    - n2 is a high byte of command length data in hexadecimal.
    - If an undefined value is found in the data string, the printer will ignore all the received barcode data with a length defined as n1, n2.
    - Valid n1, n2 values are listed in the following table:

Table 3-11: Barcode Data n1, n2 values

n1 (low byte) OFF[a]		n1 (low byte) ON[b]		n2 (high byte)[c]		
Decimal	Hexadecimal	Decimal	Hexadecimal	Decimal	Hexadecimal	Barcode Style
13	0D	12	0C	0	00	EAN-13
8	08	7	07	0	00	EAN-8
1 to 255	01 to FF	1 to 255	01 to FF	0	00	CODE 39
1 to 255	01 to FF	1 to 255	01 to FF	0	00	INTERLEAVED 2 of 5
12	0C	11	0B	0	00	UPC-A
10	0A	9	09	0	00	POST-NET
2 to 255	02 to FF	2 to 255	02 to FF	0	00	CODE 128

a. Automatic check digit generation flag is OFF.
b. Automatic check digit generation flag is ON.
c. The value of n2 does not change based on the check digit generation flag status.

CHAPTER 4: OKI Emulation Mode Printer Commands

change

This section provides a detailed description of OKI emulation mode commands you can use with your printer.

Control Codes

Control codes are one-character printer commands that are used to:

- Manage the printing of a job.
- Control the movement of the cursor, which changes the current print position.
- Control secondary font selection, such as condensed and double-wide.

The first 32 characters of the Standard ASCII table are control codes. This printer uses the following control codes.

Table 4-1: Control Codes

Code Name	Symbol	Description	Value (Dec)	Value (Hex)
Beeper	BEL	Sounds the printer beeper for approximately 1 second.	7	07
Backspace	BS	Causes the printer to move the current print position one character position to the left.	8	08
Horizontal Tab	HT	Moves the print head to the next horizontal tab position specified by the ESC D command. If no tab position is set or programmed, tabs are set by default to every 8th column, beginning at column 9. When no tab is set between the current position and the right margin or if the tabs are all cleared, the code is ignored.	9	09
Line Feed	LF	Advances the paper one line on the page. An automatic carriage return may be optionally disabled.	10	0A

Table 4-1: Control Codes (Continued)

Code Name	Symbol	Description	Value (Dec)	Value (Hex)
Vertical Tab	VT	Advances the paper to the next vertical tab position set by the ESC B command. If no tab position is set, the printer performs a single line feed. If the next vertical tab position is greater than the form length (or form length minus skip perforation), the VT does a line feed. An automatic carriage return may be optionally disabled	11	0B
Form Feed	FF	Advances the paper to the top of the next page and does a carriage return.	12	0C
Carriage Return	CR	Moves the current print position to the left margin of the current line. An automatic line feed may be optionally added by the setup.	13	0D
Double-Wide Printing by Line	SO	Prints all characters in double-width mode. This mode is canceled by the receipt of ESC [@, ESC W n, CR, LF, VT, FF, DC4, CAN or auto wrap.	14	0E
Condensed Printing	SI	Condenses printing from 10 characters per inch (cpi) to 17.1 and 12 cpi to 20.	15	0F
Select Printer	DC1	Selects the printer, causing all subsequent data to be accepted.	17	11
Select 10 cpi	DC2	Returns condensed printing to normal (10 cpi). Cancels SI mode.	18	12
Deselect Printer	DC3	This control code has no effect on the parallel interface. This command is accepted and ignored.	19	13
Cancel Double-Wide Printing by Line	DC4	Cancels double-width printing mode and returns printing to normal.	20	14
Cancel Data	CAN	Clears current line buffer of data already received to print on the current line. Does not change the current print position	24	18

Escape Sequences

An escape sequence (two or more characters of information) lets you change the way the printer is currently printing. Like a control code, it gives you control over the printed output. The escape sequence begins with the character ESC (decimal 027, hexadecimal 1B). The printer recognizes this character as the beginning of a printer command signaling that the information following is control information and not data to be printed.

Printer Command Parameters

A command parameter sets the value for a command. This value stays constant until either a different value resets the command or a command resets the printer to its default values. For example, after the printer receives a command that selects a right margin beginning at column 63, the right margin of each printed page begins at column 63. The margin remains constant until a right margin command with a different value resets the margin, or the printer is reset.

In this section, command parameters are indicated by a lowercase **n**. Usage Notes explain how to compute this parameter.

Command Structure

Data is pending.

Example of IBM Emulation Mode Printer Command

Data is pending.

Printer Command Quick Reference (IBM Emulation Mode)

Data is pending.

Control Codes in ESC Sequence Format

The following ESC sequences match the Control Code commands. See that section for a full description of each Control Code.

Escape sequences utilize the following format:

Format	ESC	BEL
Decimal	27	7
Hexadecimal	1B	07

Table 4-2: Escape Sequence Equivalents to Control Codes

Code Nem	Format ESC	Decimal 27	Hexadecimal 1B
Beeper	BEL	7	07
Backspace	BS	8	08
Horizontal Tab	HT	9	09
Line Feed	LF	10	0A
Vertical Tab	VT	11	0B
Form Feed	FF	12	0C
Carriage Return	CR	13	0D
Double-Wide Printing by LIne	SO	14	0E
Condensed Printing	SI	15	0F
Select Printer	DC1	17	11
Select 10 cpi	DC2	18	12
Deselect Printer	DC3	19	13

Table 4-2: Escape Sequence Equivalents to Control Codes (Continued)

Code Nem	Format ESC	Decimal 27	Hexadecimal 1B
Cancel Double-Wide Printing by Line	DC4	20	14
Cancel Data	CAN	24	18

General Printer Commands

The following are general Printer Commands.

Set Print Direction

This command sets the printer to print either unidirectional (left to right) printing or returns to bi-directional printing.

Format	ESC	U	**n**
Decimal	27	85	**n**
Hexadecimal	1B	55	**n**

USAGE NOTE

The value of n can be either of the following:

- 1 (dec) 01 (hex) = Unidirectional
- 0 (dec) 00 (hex) = Bi-directional

Continuous Double-Wide Printing

This command selects or cancels a double-wide printing mode that is not canceled by line feed terminators.

Format	ESC	W	**n**
Decimal	27	87	**n**
Hexadecimal	1B	57	**n**

USAGE NOTE

The value of n can be either of the following:

- 1 (dec) 01 (hex) = Selects double-wide printing mode
- 0 (dec) 00 (hex) = Cancels double-wide printing mode

Deselect Printer

When this command is sent, the printer ignores all data except DC1.

Format	ESC	Q	**n**
Decimal	27	81	**n**
Hexadecimal	1B	51	**n**

USAGE NOTE

The following values of **n** are valid:

Model	Decimal	Hexadecimal	Pro-III Mode Setting in Setup
2580	3	03	Pro-III Mode ON
	182	B6	Pro-III Mode OFF
2581	22	16	Pro-III Mode ON
	184	B8	Pro-III Mode OFF
2590	35	23	
	185	B9	
2591	16	24	
	183	B7	

Stop Printing (259X only)

This command stops printing and causes the printer to go into OFF LINE mode. Pressing the Start/Stop key returns the printer to ON LINE mode.

Format	ESC	j
Decimal	27	106
Hexadecimal	1B	6A

Print Position Commands

Relative Move Inline Forward (n/120")

This command moves the current print position to the right by the distance specified in the parameter.

Format	ESC	d	**Ln**	**Hn**
Decimal	27	100	**Ln**	**Hn**
Hexadecimal	1B	64	**Ln**	**Hn**

USAGE NOTES

- Any attempt to use this command to move the print position beyond the current right margin leaves the print position set to the right margin.

- If underscoring and/or overscoring are in effect, the space of the move is underscored/overscored (unlike the case of a horizontal tab).

- The unit of measure is 1/120 inch. The position will be moved relative to the current print position. The distance is computed as (Ln+(Hn*256)) in inches.

- When a value is represented by two parameter bytes, value (A) = Ln + Hn X 256. Calculate values of A less than 256.

  - Hn is 0.
  - Ln is the value.

- To calculate values of A equal to or greater than 255.

  - Divide the value A by 256.
  - The result is Hn.
  - The remainder is Ln.

Automatic Line Feed (LF)

Turns the automatic line feed mode On and Off.

Format	ESC	5	**n**
Decimal	27	53	**n**
Hexadecimal	1B	35	**n**

USAGE NOTES

The value of n can be either of the following:

- 1 (dec) 01 (hex) = ON
- 0 (dec) 00 (hex) = OFF
- When on, executes an automatic line feed when a carriage return is received.

Reverse Line Feed

This command feeds the paper one line in the reverse direction.

Format ESC]

Decimal 27 93

Hex 1B 5D

Caution: This command is not recommend. Repetitive use of this command can cause a paper jam.

Set Vertical Units (259X only)

For 259x printers only.

This command selects the line feed spacing increment for the following commands:

- Set Graphics Line Spacing (ESC 3)
- Graphics Variable Line Spacing (ESC J).

Format	ESC	[	\	**n1**	n2	m1	m2	m3	m4
Decimal	27	91	92	**n1**	0	0	0	**m3**	**m4**
Hexadecimal	1B	5B	5C	**n1**	00	00	00	**m3**	**m4**

USAGE NOTES

- The default is 1/216 inch. The supported alternative is 1/180 inch and 1/360 inch.

- n1 and n2 specify the number of mode bytes contained in this escape sequence. Normally, n1 is 4, and n2 is 0.

- m1 and m2 are ignored.

- m3 and m4 set the base units as follows:

Table 4-3: Set Vertical Unit - m3 and m4 values

m3		m4		
Decimal	**Hexadecimal**	**Decimal**	**Hexadecimal**	**Unit**
216	D8	00	00	1/216
180	B4	00	00	1/180
104	68	01	01	1/360

Select 1/8" Line Spacing

This command (ESC zero) sets the line spacing at 1/8 inch between each line, which is 8 lines per inch (lpi).

Format	ESC	0
Decimal	27	48
Hexadecimal	1B	30

Select 7/72" Line Spacing

This command sets the line spacing at 7/72 inch between each line, which is 10.3 lpi.

Format	ESC	1
Decimal	27	49
Hexadecimal	1B	31

Set Text Line Spacing (n/72")

This command sets line spacing in n/72 inch increments. To activate the line spacing, use the printer command Start Text Line Spacing (ESC 2).

Format	ESC	A	**n**
Decimal	27	64	**n**
Hexadecimal	1B	41	**n**

USAGE NOTE

Valid values for n are 1 through 85 (decimal), 01 through 55 (hexadecimal).

Start Text Line Spacing

This command activates the line spacing designated by the Set Line Spacing for Text (ESC A) printer command. If no value is set by ESC A, command sets the line spacing to 1/6 inch, which is 6 lpi.

Format	ESC	2
Decimal	27	50
Hexadecimal	1B	32

Page/Form Layout Commands

Set All Tabs to Power On Setting

This command sets the horizontal tabs at every 8th column, beginning at column 9 (9, 17, 25, and so on) and clears all vertical tabs.

Format	ESC	R
Decimal	27	82
Hexadecimal	1B	52

USAGE NOTE

- To set user-defined tabulation stops, use printer command ESC D for horizontal tabs and ESC B for vertical tabs.

Set Horizontal Tabs

This command sets up to 28 tabulation stops to be used with the printer command HT, Horizontal Tabulation.

Format	ESC	D	**n1**	**...**	**n28**	0
Decimal	27	680	**n1**	**...**	**n28**	0
Hexadecimal	1B	44	**n1**	**...**	**n28**	00

USAGE NOTES

- Set the tabulation stops in ascending order (n1.....n28).
- The last digit in the sequence must be 0 to terminate the command.
- Horizontal tabs are specified by column number. The left most column is numbered one.
- ESC D 0 clears all existing horizontal tab stops.
- ESC R (Set Default Tabulation Stops) resets to the default horizontal tabulation stops.
- The printer command HT, Horizontal Tabulation, activates the tabulation stops set by this Escape sequence.

Set Vertical Tabs

Sets as many as 64 tabulation stops by line number.

Format	ESC	B	**n1**	**...**	**n64**	0
Decimal	27	680	**n1**	**...**	**n64**	0
Hexadecimal	1B	44	**n1**	**...**	**n64**	00

USAGE NOTES

- Set the tabulation stops in ascending order (n1.....n64).
- The last digit in the sequence must be 0 to terminate the command.
- Vertical tab positions are specified by a line number, and the first line is numbered one.
- ESC B 0 or ESC R (Set Default Tabulation Stops) clears all vertical tab stops.
- The last digit in the sequence must be a 0 to terminate the command.
- The printer command VT, Vertical Tabulation activates the tabulation stops set by this escape sequence.
  - If no tab position is set, the printer performs a single line feed.
  - If the next vertical tab position is greater than the form length (or form length minus skip perforation), the VT does a line feed.
  - An automatic carriage return may be optionally disabled.

Set Horizontal Margins

This command sets the left and right margins.

Format	ESC	X	**n**	**m**
Decimal	27	88	**n**	**m**
Hexadecimal	1B	58	**n**	**m**

USAGE NOTES

- n selects the left margin position.
- m selects the right margin position.
- Margins are specified in the character positions at the current pitch and are stored in absolute displacement from the left edge of the paper.
- The values for n and m must be from 0 and 255. If the value is set at 0, the margin is left unchanged.

Set Automatic Perforation Skip

This command specifies the number of lines to be skipped at the bottom of each page, which creates a bottom margin.

Format	ESC	N	**n**
Decimal	27	78	**n**
Hexadecimal	1B	4E	**n**

USAGE NOTES

- This command remains in effect until:
    - Cancel Skip Perforation (ESC O) printer command is received.
    - Set Form Length in Lines (ESC C) printer command is received.
    - Set Form Length in Inches (ESC C 0) printer command is received.
- Valid values for n are 1 through 255 (decimal), 01 through FF (hexadecimal).

Cancel Automatic Perforation Skip

This command cancels Set Automatic Perforation Skip (ESC N).

Format	ESC	O
Decimal	27	79
Hexadecimal	1B	4F

Proportional Space Mode

This command turns proportional space mode on and off.

Format	ESC	P	**n**
Decimal	27	80	**n**
Hexadecimal	1B	50	**n**

USAGE NOTES

- The value of n can be either of the following:
    - 1 (dec) 01 (hex) = ON
    - 0 (dec) 00 (hex) = OFF
- (259x only) ON changes character pitch to the LQ proportional mode. OFF returns character pitch in LQ mode to the pitch selected before the proportional space mode was turned on.

Set Top of Form

This command sets the first line of printing on each page to the current vertical paper position.

Format	ESC	4
Decimal	27	52
Hexadecimal	1B	34

Set Form Length in Inches

This command sets the form length to a specified number of inches.

Format	ESC	C	00	**n**
Decimal	27	67	00	**n**
Hexadecimal	1B	43	00	**n**

USAGE NOTES

- Valid values for n are 1 through 255 (decimal), 01 through FF (hexadecimal).
- When the command is sent, the current vertical position becomes the new top of form.
- Automatic Perforation Skip is canceled

Set Form Length in Lines

This command sets the form length to a specified number of lines.

Format	ESC	C	**n**
Decimal	27	67	**n**
Hexadecimal	1B	43	**n**

USAGE NOTES

- Valid values for n are 1 through 255 (decimal), 01 through FF (hexadecimal), and works in conjunction with the current line spacing (ESC A).
- When the command is sent, the current vertical position becomes the new top of form.
- Automatic Perforation Skip is canceled.

Character Commands

Select Character Set 1

Selects character set 1 for printing.

Character set 1 contains characters and symbols that are used in the English language.

Format ESC 7

Decimal 27 55

Hex 1B 37

See page **YYY** for more information. **{Reference will be updated when document is finalized.}**

Select Character Set 2

Selects character set 2 for printing.

Character set 2 contains characters and symbols that are used in English and non-English languages.

Format ESC 6

Decimal 27 54

Hex 1B 36

See page **YYY** for more information. **{Reference will be updated when document is finalized.}**

Download a Character Set

See page **YYY** for more information. **{Reference will be updated when document is finalized.}**

Select Print Mode

This command selects the normal font or the download font in Draft, NLQ (258x only) or LQ (259x only).

Format ESC I n

Decimal 27 73 n

Hex 1B 49 n

USAGE NOTES

- This command cancels any print combinations that conflict with ESC I.

- The following table shows valid values for n for the 248x and 249x printers. The command is ignored if any other value is entered:

Table 4-4: Print Mode Values

Printer Model	Decimal	Hexadecimal	Print Mode	
258X	0	00	Draft	Resident
	1	01	Fast DP (12 cpi)	Resident
	2	02	NLQ Gothic	Resident
	3	03	NLQ Courier	Resident
	4	04	Draft	Download
	5	05	Fast DP (12 cpi)	Download
	6	06	NLQ	Download
	7	07	NLQ II	Download
	8	08	Draft	Download
	9	09	Fast DP (12 cpi)	Download
	10	0A	NLQ Gothic	Download
	11	0B	NLQ Courier Italic	Download
	12	0C	Draft	Download
	13	0D	Fast DP (12 cpi)	Download
	14	0E	NLQ	Download
	15	0F	ALT NLQ II	Download

Table 4-4: Print Mode Values (Continued)

Printer Model	Decimal	Hexadecimal	Print Mode	
259X	0	00	(Draft) 10 cpi	Normal
	8	08	(Draft) 12 cpi	Normal
	16	10	(Draft) 17 cpi	Normal
	2	02	(LQ) 10 cpi - Courier	Normal
	10	0A	(LQ) 12 cpi -Prestige	Normal
	18	12	(LQ) 17 cpi -Courier	Normal
	3	03	(LQ) Proportional	Normal
	4	04	10 cpi Draft	Download
	12	0C	12 cpi Draft	Download
	20	14	17 cpi Draft	Download
	6	06	10 cpi LQ	Download
	14	0E	12 cpi LQ	Download
	22	16	17 cpi LQ	Download
	7	07	Proportional LQ	Download

Code Page Commands

Set Code Page

Use this printer command to change the active code page.

Format	ESC	[	T	**n1**	**n2**	**n3**	**n4**	**Hc**	**Lc**
Decimal	27	91	84	**n1**	**n2**	0	0	**Hc**	**Lc**
Hexadecimal	1B	5B	54	**n1**	**n2**	00	00	**Hc**	**Lc**

USAGE NOTES

- n1 is a one-byte binary number that is the less significant byte of the two-byte parameter count.

- n2 is a one-byte binary number that is the more significant byte of the two-byte parameter count. Zero is a valid count.

- n3 and n4 are always 0.

- Hc and Lc are two-byte values that specify the code page to be used. See"Code Page Table" on page A-1 for decimal and hexadecimal values.

- This command is ignored if an unavailable code page is specified.

- To calculate Hc Lc for a code page that is not shown:
    - Divide the code page number, such as 437, by 256.
    - The whole number result is the Hc value.
    - The remainder is the Lc value.
    - If your code page has an alphabetic character, such as 437G, add 10,000 to the code page number, then divide by 256.

Continuously Print From All Character Chart

This command prints the next (n = m X 256) characters from the All Characters Chart.

Format	ESC	\	**Ln**	**Hn**	**n1**	**...**	**nn**
Decimal	27	92	**Ln**	**Hn**	**n1**	**...**	**nn**
Hexadecimal	1B	5C	**Ln**	**Hn**	**n1**	**...**	**nn**

USAGE NOTES

- Identify the number of characters (A) that you want to print.

- When a value is represented by two parameter bytes, value (A) = Ln + Hn X 256. Calculate values of A less than 256.
  - Hn is 0.
  - Ln is the value.
- To calculate values of A equal to or greater than 255.
  - Divide the value A by 256.
  - The result is Hn.
  - The remainder is Ln.

- The variables, n1 n2 n3 and so on, are the number of characters that you want to print. For example, for each character, n1 n2 n3...., that you want to print, you must input the decimal or hexadecimal digit for that character.

- Use the "Code Page Table" on page A-1 for decimal and hexadecimal values.
  - Locate the character on the code page table.
  - Use the decimal or hexadecimal digit for that character in the printer command format.

Print One Character

This command prints the next character from the All Characters Chart.

Format	ESC	^
Decimal	27	94
Hexadecimal	1B	5E

Style Commands

Set Print Quality

This command changes the print quality.

Format	ESC	[	d	n1	n2	m
Decimal	27	91	100	n1	n2	m
Hexadecimal	1B	5B	64	n1	1n	m

USAGE NOTES

- n1 and n2 specify the number of parameter bytes contained in this escape sequence. Normally, n1 is 1, and n2 is 0.

m specifies the print quality as follows:

Table 4-5: Set Print Quality m parameter values

Printer Model	Decimal	Hexadecimal	Quality
258X	0	00	No change
	1 - 63	01 - 3F	Fast Draft
	64 - 127	40 - 7F	Draft
	128 - 254	80 - E	NLQ
	255	FF	Default Font
259X	0	00	No change
	1 - 63	01 - 3F	Fast Draft
	64 - 127	40 - 7F	Draft
	128 - 191	80 - BF	Letter Quality (LQ)
	192 - 254	C0 - FE	Enhanced Leter Quality (ELQ)
	3	03	(LQ) Proportional
	255	FF	Default Font

Select Global Font

This command allows the user to vary the font, pitch and code page.

				Ln	**Hn**	**Hf**	**Lf**	**Hs**	**Ls**	**Sm**	**Nul**	**Hc**	**Lc**
Format	ESC	[	I	**Ln**	**Hn**	**Hf**	**Lf**	**Hs**	**Ls**	**Sm**	**Nul**	**Hc**	**Lc**
Decimal	27	91	73	**Ln**	**Hn**	**Hf**	**Lf**	**Hs**	**Ls**	**Sm**	**Nul**	**Hc**	**Lc**
Hexadecimal	1B	5B	49	**Ln**	**Hn**	**Hf**	**Lf**	**Hs**	**Ls**	**Sm**	**Nul**	**Hc**	**Lc**

USAGE NOTES

- Count the number of parameter bytes contained in this escape sequence as value (A).

  – When a value is represented by two parameter bytes, value (A) = Ln + Hn X 256. Calculate values of A less than 256.
  - Hn is 0.
  - Ln is the value.
  – To calculate values of A equal to or greater than 255.
  - Divide the value A by 256.
  - The result is Hn.
  - The remainder is Ln.

- If Font Lock and Pitch Lock are active, this command is ignored.

- The font global ID (Hf = high byte and Lf = low byte) specify the pitch and font typestyle you want to print. The Global Font Id Tables below describe the Hf and Lf variables. When the font global ID is valid data, size parameters (Hs, LS, Sm) are ignored.

- The size parameters (Hs, Ls and Sm) specify the pitch. They are valid when font ID (Hf and Lf) is not valid. Nul data is ignored. See Table 4-12: "Global Font Size Parameters" on page 4-26 for the valid size parameters.

- Sm specifies the size modifier. Values of Sm are:

  – 00 - No change
  – 01 - Width is measured in increments of 0.018 mm (1/1440 in.)
  – 02, 03 - Font is proportional
  – All other values are regarded as 0.

- The code page ID (Hc and Lc) specify the Code Page. See"Code Page Table" on page A-1 for decimal and hexadecimal values.

- This command uses the following best-fit algorithm in the following order:

  – Requested font, pitch and code page
  – Requested pitch and code page, first font found
  – Requested code page, first font and pitch found
  – No change

The following table applies to all models, except where noted.

Table 4-6: Global Font Id - Courier

Pitch	Decimal Hf Lf Values				Hexadecimal Hf Lf Values			
	Normal	Bold	Italic	Bold/Italic	Normal	Bold	Italic	Bold/Italic
5 (10 DW/DH)	0 244	0 245			00 F4 00 F6	00 F5		
10	0 11	0 46	0 18	0 57	00 0B	00 2E	00 12	00 39
12	1 235 0 85	0 108	0 92	0 116	01 EB 00 55	00 6C	00 5C	00 74
15	1 236 0 223 (259X)	0 214	0 215	0 216	01 EC 00 DF(259X)	00 D6	00 D7	00 D8
17	01 237 0 254	0 253			01 ED 00 FE	00 FD		
20	1 238 0 198 (259X)				01 EE 01 C6 (259X)			
24 (259X)	1 30				01 1E			
Proportional spacing	0 171	0 184	0 172	0 185	00 AB	00 B8	00 AC	00 B9

The following table applies to all models, except where noted.

Table 4-7: Global Font Id - Gothic

Pitch	Decimal Hf Lf Values				Hexadecimal Hf Lf Values			
	Normal	Bold	Italic	Bold/Italic	Normal	Bold	Italic	Bold/ Double strike
5 (10 DW/DH)	0 241	0 242		0 243 (259X)	00 F1	00 F2		00 F3 (259X)
10	0 36	0 39 (258X)			0 24	00 27 (258X)		
12	1 143 0 87	0 110	0 109		01 8F 00 57	00 6E	00 6D	
15	1 142 0 222	0 220			01 8E 00 DE	00 DC		
17	1 141 0 255				01 8D 00 FF			
20	1 140 1 25 (259X)				01 8C 01 19 (259X)			
24 (259X)	1 32				01 20			
Proportional spacing	0 174	0 157	0 162		00 AE	00 9D	00 A2	

The following table applies to 259X models only.

Table 4-8: Global Font Id - Prestige

Pitch	Decimal Hf Lf Values				Hexadecimal Hf Lf Values			
	Normal	Bold	Italic	Bold/Italic	Normal	Bold	Italic	Bold/Italic
5 (10 DW/DH)								
10	0 12	00 60			00 0C	00 3C		
12	1 239 0 86	0 111	0 112		01 EF 00 56	00 6F	00 70	
15	1 240 1 221				01 F0 00 DD			
17.1	1 201 1 0				01 C9 01 00			
20	1 202				01 CA			
24	1 31				01 1F			
Proportional spacing	1 164				00 A4			

The following table applies to 259X models only.

Table 4-9: Global Font Id - Presentor

Pitch	Decimal Hf Lf Values				Hexadecimal Hf Lf Values			
	Normal	Bold	Italic	Bold/Italic	Normal	Bold	Italic	Bold/Italic
5 (10 DW/DH)								
10	0 25				00 19			
12	1 208				01 D0			
15	1 209				01 D1			
17.1	1 210				01 D2			
20	1 211				01 D3			
24	1 35				01 23			
Proportional spacing	0 199				00 C7			

The following table applies to 259X models only.

Table 4-10: Global Font Id - Orator

Pitch	Decimal Hf Lf Values				Hexadecimal Hf Lf Values			
	Normal	Bold	Italic	Bold/Italic	Normal	Bold	Italic	Bold/Italic
5 (10 DW/DH)								
10	0 5				00 05			
12	1 203				01 CB			
15	1 204				01 CC			
17.1	1 205				01 CD			
20	1 206				01 CE			
24	1 33				01 21			
Proportional spacing	0 198				00 C6			

The following table applies to 259X models only.

Table 4-11: Global Font Id - Script

Pitch	Decimal Hf Lf Values				Hexadecimal Hf Lf Values			
	Normal	Bold	Italic	Bold/Italic	Normal	Bold	Italic	Bold/Italic
5 (10 DW/DH)								
10	0 212				01 D4			
12	1 213				01 D5			
15	1 214				01 D			
17.1	1 215				01 D7			
20	1 216				01 D8			
24	1 36				01 24			
Proportional spacing	0 200				00 C8			

Table 4-12: Global Font Size Parameters

Pitch	2580 / 25281		2590 / 2591	
	Decimal Hs Ls Values	Hexadecimal Hs Ls Values	Decimal Hs Ls Values	Hexadecimal Hs Ls Values
24 CPI Subscript			0 00 - 0 65	00 00 - 00 41
20 CPI Subscript	0 00 - 0 78	00 00 - 00 4E	0 66 - 0 77	00 42 - 00 4D
17.1 CPI Normal	0 79 - 0 90	00 4F - 00 5A	0 78 - 0 89	00 4E - 00 59
15 CPI Normal	0 91 - 0 108	00 5B - 00 6C	0 90 - 0 107	00 5A - 00 6B
12 CPI Normal	0 109 - 0 132	00 6D - 00 84	0 108 - 0 131	00 6C - 00 83
10 CPI Normal	0 133 -0 0156	00 85 - 00 9C	0 132 - 0 155	00 84 - 00 9B
8.5 CPI (17.1 CPI double-wide)	0 157 - 0 180	00 9D - 00 B4	0 156 - 0 179	00 9C - 00 B3
7.5 CPI (15 CPI double-wide)	0 181 - 0 216	00 B5 - 00 D8	0 180 - 0 215	00 B4 - 00 D7
6 CPI (12 CPI double-wide, double-high)	0 217 - 1 8	00 D9 - 01 08	0 216 - 0 254	00 D8 - 00 FE
5 CPI (10 CPI double-wide, double-high)	1 9 - 255 255	01 09 - FF FF	0 255 - 255 255	00 FF - FF FF

Note: There are subtle differences between the 258X and 259X printers. This is intentional, not a typo.

Select Print Type Style

This command selects the following printing modes:

- Character height - single or double
- Character width - single or double
- Line Spacing - single or double
- Italic print
- Shadow print (259x only)
- Outline print (259x only)

Format	ESC	[	@	**n1**	**n2**	**m1**	**m2**	**m3**	**m4**
Decimal	27	91	64	**n1**	**n2**	**m1**	0	**m3**	**m4**
Hexadecimal	1B	5B	40	**n1**	**n2**	**m1**	00	**m3**	**m4**

USAGE NOTES

- n1 and n2 specify the number of mode bytes contained in this escape sequence. Normally, n1 is 4, and n2 is 0.
- Normally, m2 is 0 (Dec) 00 (Hex). (Not supported)
- m1 controls start and stop of the character modes. See the table below for values.
- m3 controls line spacing and character height. It as two parts: a high-order half-byte and a low-order half-byte. The high-order half-byte of m3 controls the line spacing and the low-order half-byte controls the character height. See the table below for values.
- m4 controls the character width. Only the low-order half-byte is significant in this mode byte. The high-order half-byte is ignored. See the table below for values.

See the following table for m1, m3, and m4 values.

Table 4-13: Select Print Type Style Values

Variable	Decimal	Hexadecimal	Description	
m1	0	00	No change	
	1	01	Start Italic Print	
	2	02	Stop Italic Print	
	4	04	Start Outline Print (259X only)	
	8	08	Stop Outline Print (259X only)	
	16	10	Start Shadow Print (259X only)	
	32	20	Stop Shadow Print (259X only)	
m3			**Chracter Height**	**Line Space**
	0	00	Unchanged	Unchanged
	16	10	Unchanged	Single
	32	20	Unchanged	Double
	1	01	Single	Unchanged
	17	11	Single	Single
	33	21	Single	Double
	2	02	Double	Unchanged
	18	12	Double	Single
	34	22	Double	Double
m4	0	01	Unchanged	
	1	01	Single	
	2	02	Double	

Select 12 cpi

This command sets the pitch at 12 cpi.

Format	ESC	:
Decimal	27	58
Hexadecimal	1B	3A

Select/Cancel Emphasized Mode

This command selects and cancels the emphasized mode.

To select emphasized mode:

Format	ESC	E
Decimal	27	69
Hexadecimal	1B	45

To cancel emphasized mode:

Format	ESC	F
Decimal	27	70
Hexadecimal	1B	46

Select/Cancel Double-Strike Mode

This command selects and cancels the double-strike mode.

Double-strike print results in a darker print because the printhead strikes the character twice.

To select double-strike mode:

Format	ESC	G
Decimal	27	71
Hexadecimal	1B	47

To cancel double-strike mode:

Format	ESC	H
Decimal	27	72
Hexadecimal	1B	48

Start Superscript or Subscript Printing

This command selects the subscript and superscript modes.

Format	ESC	S	**n**
Decimal	27	83	**n**
Hexadecimal	1B	53	**n**

USAGE NOTE

The value of n can be either of the following:

- 1 (dec) 01 (hex) = Subscript ON
- 0 (dec) 00 (hex) = Superscript ON

Cancel Superscript and Subscript Printing

This command cancels the subscript and superscript modes.

Format	ESC	T
Decimal	27	84
Hexadecimal	1B	54

Score Select (259X only)

For 259x printers only.

This command selects forms of overscore, underscore, and strikethrough.

Format	ESC	[	-	**n1**	**n2**	**m1**	**m2**
Decimal	27	91	45	**n1**	**n2**	**m1**	**m2**
Hexadecimal	1B	5B	2D	**n1**	**n2**	**m1**	**m2**

USAGE NOTES

To cancel this command, designate type as Dec 255 or ex FF.

- n1 and n2 specify the number of parameter bytes contained in this escape sequence. Normally, n1 is 2, and n2 is 0.
- m1 selects score location as follows:
  - 1 (dec) 01 (hex) equals Underscore
  - 2 (dec) 02 (hex) equals Strikethrough

– 3 (dec) 03 (hex) equals Overscore

- m2 selects score type as follows:

    – 0 (dec) 00 (hex) equals Cancel
    – 1 (dec) 01 (hex) equals Single
    – 2 (dec) 02 (hex) equals Double

Continuous Underscore

This command begins and ends continuous underscore of spaces and characters.

To begin Continuous Underscore:

Format	ESC	-	**n**
Decimal	27	45	**n**
Hexadecimal	1B	2D	**n**

USAGE NOTE

- The value of n can be either of the following:

    – 1 (dec) 01 (hex) = Underscore ON
    – 0 (dec) 00 (hex) = Underscore OFF

Continuous Overscore

This command begins and ends continuous overscore of spaces and characters.

To begin Continuous Overscore:

Format	ESC	_	**n**
Decimal	27	95	**n**
Hexadecimal	1B	5F	**n**

USAGE NOTE

- The value of n can be either of the following:

    – 1 (dec) 01 (hex) = Overscore ON
    – 0 (dec) 00 (hex) = Overscore OFF

Graphics Commands

Normal Density Bit Image Graphics (60 dpi)

This command sends normal density bit images to be printed at 60 dots per inch (dpi) horizontally and 72 dpi vertically.

Format	ESC	K	**Ln**	**Hn**	**V1**	**...**	**Vn**
Decimal	27	75	**Ln**	**Hn**	**V1**	**...**	**Vn**
Hexadecimal	1B	4B	**Ln**	**Hn**	**V1**	**...**	**Vn**

USAGE NOTES

- The command discards all data that goes beyond the current margin.

- Text and graphics can be printed on the same line.

- Count the total number of bytes of binary bit-image data (A). The total number of bytes cannot exceed the number of dot columns that remain on the line. This value is represented by Ln and Hn.

  – When a value is represented by two parameter bytes, value (A) = Ln + Hn X 256. Calculate values of A less than 256.
  - Hn is 0.
  - Ln is the value.
  – To calculate values of A equal to or greater than 255.
  - Divide the value A by 256.
  - The result is Hn.
  - The remainder is Ln.

- V1 though Vn represent graphics data.

Each vertical dot column can have 8 rows of dots.

To print bit image graphics, the printer uses either the first 8 (258x) or 20 (259x) wires of the printhead to map the eight bits of data.

The following table shows how the print wires are mapped for the 258X printers.

Table 4-14: Print Wire Mapping (258X only)

Dot Position	Bit Number	Decimal	Hexadecimal
Top			

Table 4-14: Print Wire Mapping (258X only)

Dot Position	Bit Number	Decimal	Hexadecimal
	7	128	80
	6	64	40
	5	32	20
	4	16	10
	3	8	08
	2	4	04
	1	2	02
	0	1	01
Bottom			

The following table shows how the print wires are mapped for the 259X printers.

Table 4-15: Print Wire Mapping (259X only)

Dot Position	Bit Number	Decimal	Hexadecimal	
Top				
	7	128	80	1, 2 If dots 7 and 6 print, wire 3 is also used.
	6	64	40	4, 5
	5	32	20	6, 7 If dots 5and 4 print, wire 8is also used.
	4	16	10	9, 10
	3	8	08	11, 12 If dots 3 and 2 print, wire 13 is also used.
	2	4	04	14, 15
	1	2	02	16, 17 If dots 1and 0 print, wire 18 is also used.
	0	1	01	19. 20
Bottom				

Dual-Density Bit Image Graphics (Half Speed 120 dpi)

This command sends normal density bit images to be printed at 120 dots per inch (dpi).

Format	ESC	L	**Ln**	**Hn**	**V1**	**...**	**Vn**
Decimal	27	76	**Ln**	**Hn**	**V1**	**...**	**Vn**
Hexadecimal	1B	4C	**Ln**	**Hn**	**V1**	**...**	**Vn**

Dual-Density Bit Image Graphics (Normal Speed 120 dpi)

This command sends bit images to be printed at a horizontal resolution of 120 dots per inch (dpi).

Format	ESC	Y	**Ln**	**Hn**	**V1**	**...**	**Vn**
Decimal	27	89	**Ln**	**Hn**	**V1**	**...**	**Vn**
Hexadecimal	1B	59	**Ln**	**Hn**	**V1**	**...**	**Vn**

USAGE NOTES

- The command discards all data that goes beyond the current margin.

- Text and graphics can be printed on the same line.

- Each vertical dot column can have 8 rows of dots.

- ESC Y dual-density graphics print at normal speed.

- ESC Y dual-density graphics cannot print horizontally adjacent dots.

- See "Normal Density Bit Image Graphics (60 dpi)" on page 4-32 for more information on bit image graphics.

High-Density Bit Image Graphics (240 dpi)

This command sends bit images to be printed at a horizontal resolution of 240 dots per inch (dpi).

Format	ESC	Z	**Ln**	**Hn**	**V1**	**...**	**Vn**
Decimal	27	90	**Ln**	**Hn**	**V1**	**...**	**Vn**
Hexadecimal	1B	5A	**Ln**	**Hn**	**V1**	**...**	**Vn**

- The command discards all data that goes beyond the current margin.
- Text and graphics can be printed on the same line.
- Each vertical dot column can have 8 rows of dots.
- ESC Z high-density graphics print at half-speed of normal-density bit image graphics.
- ESC Z high-density graphics cannot print horizontally adjacent dots.
- See "Normal Density Bit Image Graphics (60 dpi)" on page 4-32 for more information on bit image graphics.

High Resolution Graphics (259x only)

For 259x printers only.

This command sends data for dot matrix graphics to the printer.

Format	ESC	[	g	**Ln**	**Hn**	**m**	**V1**	**...**	**Vn**
Decimal	27	91	103	**Ln**	**Hn**	**m**	**V1**	**...**	**Vn**
Hexadecimal	1B	5B	67	**Ln**	**Hn**	**m**	**V1**	**...**	**Vn**

Format ESC [g n1 n2 m data

Decimal 27 91 103 n1 n2 m data

Hex 1B5B 67 n1 n2 m data

USAGE NOTES

- This command allows selection of eight modes for both emulated 8-wire graphics and 24-wire graphics.
- Count the total number of bytes of binary bit-image data PLUS ONE (A). The total number of bytes cannot exceed the number of dot columns that remain on the line. This value is represented by Ln and Hn.
    - When a value is represented by two parameter bytes, value (A) = Ln + Hn X 256. Calculate values of A less than 256.
    - Hn is 0.
    - Ln is the value.
    - To calculate values of A equal to or greater than 255.
    - Divide the value A by 256.
    - The result is Hn.

- The remainder is Ln.

- V1 though Vn represent graphics data.

- m is a one-byte value to select the graphics mode. The following modes are supported:

Table 4-16: High Resolution Graphics m parameter values

Decimal	Hexadecimal	Horizontal Density	Wire	Comments
0	00	60	8	Same as ESC K graphics command
1	01	120	8	Same as ESC L graphics command
2	02	120	8	Same as ESC Y graphics command
3	03	240	8	Same as ESC Y graphics command
8	08	60	24	High resolution for ESC K
9	09	120	24	High resolution for ESC L
11	0B	180	24	
12	0C	360	24	
13	0D	120	48	
14	0E	180	48	
16	10	360	48	

Note:
The graphics data is organized by byte. For 8-wire modes, it is arranged and mapped to the wires identically to ESC K. For 24-wire modes, the data has three bytes per slice, with the most significant bit of he first byte mapping to the top wire and the least significant bit to of the third byte mapping to the bottom wire. The slices are in sequence from left to right.

Modes 2,3 and 12 use consecutive dot elimination. No two adjacent horizontal dots can be printed. The second is eliminated. For high resolution mode (8,9,11 and 12), the count should be: 1+(3 number of slices).

For 48-wire modes, the data has six bytes per slice.
However the 48-wire image is mapped to the 24-wire head by ORing bits 1 and 2 to wire 1, bit 3 and 4 to wire 2, and so on.

Set Graphics Line Spacing (n/216")

This command sets line spacing to n/216 inches. It does not cause the form to move. It changes the vertical distance moved when a line feed command is received.

Format	ESC	3	**n**
Decimal	27	51	**n**
Hexadecimal	1B	33	**n**

USAGE NOTES

- Valid values for n are 1 through 255 (decimal), 01 through FF (hexadecimal).

- n must be a multiple of 3 to advance exactly n/216 inches.

- 259x printers only - The units used by ESC 3 can be changed by ESC [\ Set Vertical Units.

Graphics Variable Line Spacing (n/216")

Advances the paper in a vertical movement a distance of n/216 inches relative to the current print position.

Format	ESC	J	**n**
Decimal	27	74	**n**
Hexadecimal	1B	4A	**n**

Format ESC J n

Decimal 27 74 n

Hex 1B 4A n

USAGE NOTES

- Valid values for n are 1 through 255 (decimal), 01 through FF (hexadecimal).

- 259x printers only - The units used in ESC J can be changed by ESC [\ Set Vertical Units.

- n must be a multiple of 3 to advance exactly n/216 inch.

Bar Code Commands

Setup Barcode Parameter

This command sets the barcode parameters to the printer.

Format	ESC	[	f	n1	n2	k	m	s	V1	V2	c
Decimal	27	91	102	6	0	k	m	s	V1	V2	
Hexadecimal	1B	5B	66	06	00	k	m	s	V1	V2	

USAGE NOTES

- The printer must receive this command prior to the barcode data command. The printer may ignore this command when the received parameters include undefined data.

- The latest barcode command cancels all previous commands.

- n1 and n2 specify command length. n1 is always 6 (dec), 06 (hex). n2 is always 0 (dec), 00 (hex).

- k specifies the barcode type . See "Barcode Types" on page 4-38.

- m specifies the module width. See "Barcode Module Width" on page 4-39.

- The variable s denotes the space width adjustment and affects the barcode printing width. "s" specifies space width adjustment and is used for each 'spaces' to match optical conditions. There is no effect for the 'bar' width adjustment. The s parameter is ignored in Post-Net. See remarks in this section for definition of 'space' and 'bar'. See "Adjustment Unit" on page 4-39.

- V1 and V2 specify bar length (2 bytes). See "Barcode Length" on page 4-40.

- c specifies control flag. See "Barcode Control Flag" on page 4-41.

Barcode Types

The following values are valid for k:

Table 4-17: Barcode Types

Decimal	Hexadecimal	Barcode
177	B1	NW7
178	B2	EAN-13
179	B3	EAN-8

Table 4-17: Barcode Types (Continued)

Decimal	Hexadecimal	Barcode
180	B4	CODE 39
181	B5	INDUSTRIAL 2 of 5
182	B6	INTERLEAVED 2 of 5
183	B7	UPC-A
184	B8	UPC-E
185	B9	POST-NET (barcode)
186	BA	CODE 128

Barcode Module Width

The suggested values for m are as follows:

Table 4-18: Barcode Module Width

m		Unit Module Dots	Width	
Decimal	Hexadecimal		(259X) 24 wire	(258X) 9 wire
0	00	default (2 dots)	0.015 in.	0.021 in.
1 *	01*	2 dots	0.012 in.	0.017 in.
2	02	2 dots	0.015 in.	0.021 in.
3	03	3 dots	0.021 in.	0.030 in.
4	04	4 dots	0.026 in.	0.038 in.

Notes:
* When m = 1, human readable flag is always ignored, and its character is not printed.

In case of "Post-Net", this value only affects bar-width and does not affect bar-pitch.

When m = 1, the barcode prints by 1/360 or 1/240 full dot method. For all other values, the barcode prints by half dot method.

Module width values are nominal values.

Adjustment Unit

24 wire printers (259X) 1=1/360 in.

9 wire printers (258X) 1=1/240 in

Adjustment Values are:

Table 4-19: Barcode Space Width Adjustment

s	Decimal	Hexadecimal
-3	253	FD
-2	254	FE
-1	255	FF
0	0	00 (default)
1	1	01
2	2	02
3	3	03
Note: Undefined s value is handled as default value.		

Barcode Type	BAR	SPACE
NW-7	4	3
EAN/UPC-A	2	2
CODE 39	5	4 + 1 Gap
Interleaved 2 of 5	5	5
CODE 128	3	3

"s" value affects barcode printing width. If barcode printing area reaches to the right or left margin, the printer ignores this command.

Barcode Length

The variables v1 and v2 control the bar length. V1 specifies lower byte. V2 specifies upper byte. Bar length is controlled by multiple value of a unit of 1/2160 inch.

Values for V1, V2 are:

Table 4-20: Barcode Length

		V1, V2 value			
	Model	Decimal	Hexadecimal		
minimum values	24 wire (259X)	288	120		
	9 wire (248X)	270	10E		

Table 4-20: Barcode Length (Continued)

		V1, V2 value			
	Model	**Dec**	**Hex**	**Vertical Pitch**	
all barcodes except Post-Net [a]	24 wire (259X)	12	0C	1/180 inch	
	9 wire (248X)	30	1E	1/72 inch	
	Model	**Dec**	**Hex**	**long bar height**	**short bar height**
Post-Net [b]	24 wire (259X)	288	120	24/180 inch	8/180 inch
	9 wire (248X)	270	10E	18/144 inch	6/144 inch

a. All the input data is rounded to the multiple value shown.
b. Barcode height is fixed to the values shown.

Barcode Control Flag

The control flag is made up of 8 bits as follows:

Table 4-21: Barcode Control Flags

Bit	Description	Decimal	Hexadecimal	Effect
b1	Check Digit	0	00	No check code is generated by the printer. The host computer should generate the check code.
		1	01	Check code is generated automatically by the printer.
b2	Human Readable Character	0	00	Print On
		1	01	Print Off
b3	EAN-13 (13th digit), UPC-A (number system character) flag character position	0	00	Center
		1	01	Under
b4-b8	not used			

Setup Barcode Data

This command sets the barcode data on the current printing position.

Format	ESC	[	p	**n1**	**n2**	**d1**	**d2**
Decimal	27	91	112	**n1**	**n2**	**d1**	**d2**
Hexadecimal	1B	5B	70	**n1**	**n2**	**d1**	**d2**

USAGE NOTES

- The printer must receive the Setup command ESC [f prior to the ESC [p command.

- The barcode prints after the printer receives the LF line feed command.

- The printer may ignore this command in the following conditions:
    – The barcode print area exceeds the left or right margin.
    – The barcode print area exceeds the page margin.
    – Undefined data is included in the command. In this case, the command strings defined "n1,n2" are ignored.

- n1 and n2 specify:
    – n1, n2 show data quantity following ESC [p n1, n2.
    – n1 is a low byte of command length data in hexadecimal.
    – n2 is a high byte of command length data in hexadecimal.
    – If an undefined value is found in the data string, the printer will ignore all the received barcode data with a length defined as n1, n2.
    – Valid n1, n2 values are listed in the following table:

Table 4-22: Barcode Data n1, n2 values

n1 (low byte) OFF[a]		n1 (low byte) ON[b]		n2 (high byte)[c]		
Decimal	Hexadecimal	Decimal	Hexadecimal	Decimal	Hexadecimal	Barcode Style
13	0D	12	0C	0	00	EAN-13
8	08	7	07	0	00	EAN-8
1 to 255	01 to FF	1 to 255	01 to FF	0	00	CODE 39
1 to 255	01 to FF	1 to 255	01 to FF	0	00	INTERLEAVED 2 of 5
12	0C	11	0B	0	00	UPC-A
10	0A	9	09	0	00	POST-NET
2 to 255	02 to FF	2 to 255	02 to FF	0	00	CODE 128

a. Automatic check digit generation flag is OFF.
b. Automatic check digit generation flag is ON.
c. The value of n2 does not change based on the check digit generation flag status.

CHAPTER 5: Code Pages

Enabling code page character support

change

In addition to the standard support for the US and Western Europe code pages, the 2500 series forms printers include support for characters contained in a variety of other code pages.

When the printer is switched to one of these modes, the new set of code pages replaces those supported in the standard operating mode.

1 Turn the printer off.

2 Raise the Ribbon access cover and manually move the Carrier all the way to the left (Carrier home position sensor = ON). **{insert graphic}**

3 Press and hold one or more buttons on layer 2 of the control panel while turning the printer on as described in the following table.

Note: Buttons must be held until the printer initializes.

Character Support	Control Panel Buttons	Support on 258x printers	Support on 259x printers
Standard	Micro up	included	included
Eastern Europe	Micro down	included	included[a]
Baltic	Set up	included	included
Arabic	Micro ↑ + Micro ↓	included	included
Levant	Micro ↑ + Setup	included	requires flash download and replaces Eastern European support[a]
OCR-B	Micro ↓ + Setup	included	requires flash download and replaces Eastern European support[a]
OKI	must be enabled via printer emulation settings. [b]	included	not supported

a. Eastern European support can be restored via flash download. This is only required if Levant or OCR-B has been downloaded.

b. See sections **XX**.

4 Once the printer has initialized, it will allow printing of alternate characters, by selecting one of the appropriate code pages. See section **XX** for code page information.

5 Verify by printing a test page.

   a Turn the printer off.

   b Hold down the LineFeed button on the control panel while turning on the printer. **{insert graphic}**

   c The test page will indicate the current type of character support at the end of the second line printed or `Standard` if no change occurred. **{insert sample test page.}**

Code page samples

A sample of each code page follows.

Code Page 437

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	- 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80	Ç 00C7	ü 00FC	é 00E9	â 00E2	ä 00E4	à 00E0	å 00E5	ç 00E7	ê 00EA	ë 00EB	è 00E8	ï 00EF	î 00EE	ì 00EC	Ä 00C4	Å 00C5
90	É 00C9	æ 00E6	Æ 00C6	ô 00F4	ö 00F6	ò 00F2	û 00FB	ù 00F9	ÿ 00FF	Ö 00D6	Ü 00DC	¢ 00A2	£ 00A3	¥ 00A5	₧ 20A7	ƒ 0192
A0	á 00E1	í 00ED	ó 00F3	ú 00FA	ñ 00F1	Ñ 00D1	ª 00AA	º 00BA	¿ 00BF	⌐ 2310	¬ 00AC	½ 00BD	¼ 00BC	¡ 00A1	« 00AB	» 00BB
B0	░ 2591	▒ 2592	▓ 2593	│ 2502	┤ 2524	╡ 2561	╢ 2562	╖ 2556	╕ 2555	╣ 2563	║ 2551	╗ 2557	╝ 255D	╜ 255C	╛ 255B	┐ 2510
C0	└ 2514	┴ 2534	┬ 252C	├ 251C	─ 2500	┼ 253C	╞ 255E	╟ 255F	╚ 255A	╔ 2554	╩ 2569	╦ 2566	╠ 2560	═ 2550	╬ 256C	╧ 2567
D0	╨ 2568	╤ 2564	╥ 2565	╙ 2559	╘ 2558	╒ 2552	╓ 2553	╫ 256B	╪ 256A	┘ 2518	┌ 250C	█ 2588	▄ 2584	▌ 258C	▐ 2590	▀ 2580
E0	α 03B1	ß 00DF	Γ 0393	π 03C0	Σ 03A3	σ 03C3	µ 00B5	τ 03C4	Φ 03A6	Θ 0398	Ω 03A9	δ 03B4	∞ 221E	φ 03C6	ε 03B5	∩ 2229
F0	≡ 2261	± 00B1	≥ 2265	≤ 2264	⌠ 2320	⌡ 2321	÷ 00F7	≈ 2248	° 00B0	∙ 2219	· 00B7	√ 221A	ⁿ 207F	² 00B2	■ 25A0	NBSP 00A0

Code Page 437G

Code Page 449P

Code Page 708

Code Page 720

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	- 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80			é 00E9	â 00E2		à 00E0		ç 00E7	ê 00EA	ë 00EB	è 00E8	ï 00EF	î 00EE			
90		́ 0651	̊ 0652	õ 00F4	¤ 00A4	_ 0640	û 00FB	ù 00F9	ء 0621	آ 0622	أ 0623	ؤ 0624	£ 00A3	إ 0625	ئ 0626	ا 0627
A0	ب 0628	ة 0629	ت 062A	ث 062B	ج 062C	ح 062D	خ 062E	د 062F	ذ 0630	ر 0631	ز 0632	س 0633	ش 0634	ص 0635	« 00AB	» 00BB
B0	░ 2591	▒ 2592	▓ 2593	│ 2502	┤ 2524	╡ 2561	╢ 2562	╖ 2556	╕ 2555	╣ 2563	║ 2551	╗ 2557	╝ 255D	╜ 255C	╛ 255B	┐ 2510
C0	└ 2514	┴ 2534	┬ 252C	├ 251C	─ 2500	┼ 253C	╞ 255E	╟ 255F	╚ 255A	╔ 2554	╩ 2569	╦ 2566	╠ 2560	═ 2550	╬ 256C	╧ 2567
D0	╨ 2568	╤ 2564	╥ 2565	╙ 2559	╘ 2558	╒ 2552	╓ 2553	╫ 256B	╪ 256A	┘ 2518	┌ 250C	█ 2588	▄ 2584	▌ 258C	▐ 2590	▀ 2580
E0	ض 0636	ط 0637	ظ 0638	ع 0639	غ 063A	ف 0641	µ 00B5	ق 0642	ك 0643	ل 0644	م 0645	ن 0646	ه 0647	و 0648	ى 0649	ي 064A
F0	≡ 2261	ً 064B	ٌ 064C	ٍ 064D	َ 064E	ُ 064F	ِ 0650	≈ 2248	° 00B0	∙ 2219	· 00B7	√ 221A	ⁿ 207F	² 00B2	■ 25A0	NBSP 00A0

Code Page 771

Code Page 773

Code Page 774

Code Page 775

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	− 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80	Ć 0106	ü 00FC	é 00E9	ā 0101	ä 00E4	ġ 0123	å 00E5	ć 0107	ł 0142	ē 0113	Ŗ 0156	ŗ 0157	ī 012B	Ź 0179	Ä 00C4	Å 00C5
90	É 00C9	æ 00E6	Æ 00C6	ō 014D	ö 00F6	Ģ 0122	¢ 00A2	Ś 015A	ś 015B	Ö 00D6	Ü 00DC	ø 00F8	£ 00A3	Ø 00D8	× 00D7	¤ 00A4
A0	Ā 0100	Ī 012A	ó 00F3	Ż 017B	ż 017C	ź 017A	" 201D	¦ 00A6	© 00A9	® 00AE	¬ 00AC	½ 00BD	¼ 00BC	Ł 0141	« 00AB	» 00BB
B0	░ 2591	▒ 2592	▓ 2593	│ 2502	┤ 2524	Ą 0104	Č 010C	Ę 0118	Ė 0116	╣ 2563	║ 2551	╗ 2557	╝ 255D	Į 012E	Š 0160	┐ 2510
C0	└ 2514	┴ 2534	┬ 252C	├ 251C	─ 2500	┼ 253C	Ų 0172	Ū 016A	╚ 255A	╔ 2554	╩ 2569	╦ 2566	╠ 2560	═ 2550	╬ 256C	Ž 017D
D0	ą 0105	č 010D	ę 0119	ė 0117	į 012F	š 0161	ų 0173	ū 016B	ž 017E	┘ 2518	┌ 250C	█ 2588	▄ 2584	▌ 258C	▐ 2590	▀ 2580
E0	Ó 00D3	ß 00DF	Ō 014C	Ń 0143	õ 00F5	Õ 00D5	µ 00B5	ń 0144	Ķ 0136	ķ 0137	Ļ 013B	ļ 013C	ņ 0146	Ē 0112	Ņ 0145	' 2019
F0	00AD	± 00B1	" 201C	¾ 00BE	¶ 00B6	§ 00A7	÷ 00F7	„ 201E	° 00B0	∙ 2219	· 00B7	¹ 00B9	³ 00B3	² 00B2	■ 25A0	NBSP 00A0

Code Page 813

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	- 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80																
90																
A0	NBSP 00A0	ʽ 02BD	ʼ 02BC	£ 00A3			¦ 00A6	§ 00A7	¨ 00A8	© 00A9		« 00AB	¬ 00AC	00AD		― 2015
B0	° 00B0	± 00B1	² 00B2	³ 00B3	΄ 0384	΅ 0385	Ά 0386	· 00B7	Έ 0388	Ή 0389	Ί 038A	» 00BB	Ό 038C	½ 00BD	Ύ 038E	Ω 038F
C0	ΐ 0390	Α 0391	Β 0392	Γ 0393	Δ 0394	Ε 0395	Ζ 0396	Η 0397	Θ 0398	Ι 0399	Κ 039A	Λ 039B	Μ 039C	Ν 039D	Ξ 039E	Ο 039F
D0	Π 03A0	Ρ 03A1		Σ 03A3	Τ 03A4	Υ 03A5	Φ 03A6	Χ 03A7	Ψ 03A8	Ω 03A9	Ϊ 03AA	Ϋ 03AB	ά 03AC	έ 03AD	ή 03AE	ί 03AF
E0	ΰ 03B0	α 03B1	β 03B2	γ 03B3	δ 03B4	ε 03B5	ζ 03B6	η 03B7	θ 03B8	ι 03B9	κ 03BA	λ 03BB	μ 03BC	ν 03BD	ξ 03BE	ο 03BF
F0	π 03C0	ρ 03C1	ς 03C2	σ 03C3	τ 03C4	υ 03C5	φ 03C6	χ 03C7	ψ 03C8	ω 03C9	ϊ 03CA	ϋ 03CB	ό 03CC	ύ 03CD	ώ 03CE	

Code Page 850

Code Page 850B

Code Page 851

Code Page 852

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	- 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80	Ç 00C7	ü 00FC	é 00E9	â 00E2	ä 00E4	ů 016F	ć 0107	ç 00E7	ł 0142	ë 00EB	Ő 0150	ő 0151	î 00EE	Ź 0179	Ä 00C4	Ć 0106
90	É 00C9	Ĺ 0139	ĺ 013A	ô 00F4	ö 00F6	Ľ 013D	ľ 013E	Ś 015A	ś 015B	Ö 00D6	Ü 00DC	Ť 0164	ť 0165	Ł 0141	× 00D7	č 010D
A0	á 00E1	í 00ED	ó 00F3	ú 00FA	Ą 0104	ą 0105	Ž 017D	ž 017E	Ę 0118	ę 0119	¬ 00AC	ź 017A	Č 010C	ş 015F	« 00AB	» 00BB
B0	░ 2591	▒ 2592	▓ 2593	│ 2502	┤ 2524	Á 00C1	Â 00C2	Ě 011A	Ş 015E	╣ 2563	║ 2551	╗ 2557	╝ 255D	Ż 017B	ż 017C	┐ 2510
C0	└ 2514	┴ 2534	┬ 252C	├ 251C	─ 2500	┼ 253C	Ă 0102	ă 0103	╚ 255A	╔ 2554	╩ 2569	╦ 2566	╠ 2560	═ 2550	╬ 256C	¤ 00A4
D0	đ 0111	Đ 0110	Ď 010E	Ë 00CB	ď 010F	Ň 0147	Í 00CD	Î 00CE	ě 011B	┘ 2518	┌ 250C	█ 2588	▄ 2584	Ţ 0162	Ů 016E	▀ 2580
E0	Ó 00D3	ß 00DF	Ô 00D4	Ń 0143	ń 0144	ň 0148	Š 0160	š 0161	Ŕ 0154	Ú 00DA	ŕ 0155	Ű 0170	ý 00FD	Ý 00DD	ţ 0163	´ 00B4
F0	00AD	˝ 02DD	˛ 02DB	ˇ 02C7	˘ 02D8	§ 00A7	÷ 00F7	¸ 00B8	° 00B0	¨ 00A8	· 02D9	ű 0171	Ř 0158	ř 0159	■ 25A0	NBSP 00A0

Code Page 853T

Code Page 855

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	- 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B		007C	} 007D	~ 007E	DEL 007F
80	ђ 0452	Ђ 0402	ѓ 0453	Ѓ 0403	ё 0451	Ё 0401	є 0454	Є 0404	ѕ 0455	Ѕ 0405	і 0456	І 0406	ї 0457	Ї 0407	ј 0458	Ј 0408
90	љ 0459	Љ 0409	њ 045A	Њ 040A	ћ 045B	Ћ 040B	ќ 045C	Ќ 040C	ў 045E	Ў 040E	џ 045F	Џ 040F	ю 044E	Ю 042E	ъ 044A	Ъ 042A
A0	а 0430	А 0410	б 0431	Б 0411	ц 0446	Ц 0426	д 0434	Д 0414	е 0435	Е 0415	ф 0444	Ф 0424	г 0433	Г 0413	« 00AB	» 00BB
B0	▒ 2591	▓ 2592	▓ 2593	│ 2502	┤ 2524	х 0445	Х 0425	и 0438	И 0418	╣ 2563	║ 2551	╗ 2557	╝ 255D	й 0439	Й 0419	┐ 2510
C0	└ 2514	┴ 2534	┬ 252C	├ 251C	─ 2500	┼ 253C	к 043A	К 041A	╚ 255A	╔ 2554	╩ 2569	╦ 2566	╠ 2560	═ 2550	╬ 256C	¤ 00A4
D0	л 043B	Л 041B	м 043C	М 041C	н 043D	Н 041D	о 043E	О 041E	п 043F	┘ 2518	┌ 250C	█ 2588	▄ 2584	П 041F	я 044F	▀ 2580
E0	Я 042F	р 0440	Р 0420	с 0441	С 0421	т 0442	Т 0422	у 0443	У 0423	ж 0436	Ж 0416	в 0432	В 0412	ь 044C	Ь 042C	№ 2116
F0	00AD	ы 044B	Ы 042B	з 0437	З 0417	ш 0448	Ш 0428	э 044D	Э 042D	щ 0449	Щ 0429	ч 0447	Ч 0427	§ 00A7	■ 25A0	NBSP 00A0

Code Page 856

Code Page 857

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	- 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80	Ç 00C7	ü 00FC	é 00E9	â 00E2	ä 00E4	à 00E0	å 00E5	ç 00E7	ê 00EA	ë 00EB	è 00E8	ï 00EF	î 00EE	ı 0131	Ä 00C4	Å 00C5
90	É 00C9	æ 00E6	Æ 00C6	ô 00F4	ö 00F6	ò 00F2	û 00FB	ù 00F9	İ 0130	Ö 00D6	Ü 00DC	ø 00F8	£ 00A3	Ø 00D8	Ş 015E	ş 015F
A0	á 00E1	í 00ED	ó 00F3	ú 00FA	ñ 00F1	Ñ 00D1	Ğ 011E	ğ 011F	¿ 00BF	® 00AE	¬ 00AC	½ 00BD	¼ 00BC	¡ 00A1	« 00AB	» 00BB
B0	░ 2591	▒ 2592	▓ 2593	│ 2502	┤ 2524	Á 00C1	Â 00C2	À 00C0	© 00A9	╣ 2563	║ 2551	╗ 2557	╝ 255D	¢ 00A2	¥ 00A5	┐ 2510
C0	└ 2514	┴ 2534	┬ 252C	├ 251C	─ 2500	┼ 253C	ã 00E3	Ã 00C3	╚ 255A	╔ 2554	╩ 2569	╦ 2566	╠ 2560	═ 2550	╬ 256C	¤ 00A4
D0	º 00BA	ª 00AA	Ê 00CA	Ë 00CB	È 00C8	░	Í 00CD	Î 00CE	Ï 00CF	┘ 2518	┌ 250C	█ 2588	▄ 2584	¦ 00A6	Ì 00CC	▀ 2580
E0	Ó 00D3	ß 00DF	Ô 00D4	Ò 00D2	õ 00F5	Õ 00D5	µ 00B5	░	× 00D7	Ú 00DA	Û 00DB	Ù 00D9	ì 00EC	ÿ 00FF	¯ 00AF	´ 00B4
F0	00AD	± 00B1	░	¾ 00BE	¶ 00B6	§ 00A7	÷ 00F7	¸ 00B8	° 00B0	¨ 00A8	· 00B7	¹ 00B9	³ 00B3	² 00B2	■ 25A0	NBSP 00A0

Code Page 858

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	− 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80	Ç 00C7	ü 00FC	é 00E9	â 00E2	ä 00E4	à 00E0	å 00E5	ç 00E7	ê 00EA	ë 00EB	è 00E8	ï 00EF	î 00EE	ì 00EC	Ä 00C4	Å 00C5
90	É 00C9	æ 00E6	Æ 00C6	ô 00F4	ö 00F6	ò 00F2	û 00FB	ù 00F9	ÿ 00FF	Ö 00D6	Ü 00DC	ø 00F8	£ 00A3	Ø 00D8	× 00D7	ƒ 0192
A0	á 00E1	í 00ED	ó 00F3	ú 00FA	ñ 00F1	Ñ 00D1	ª 00AA	º 00BA	¿ 00BF	® 00AE	¬ 00AC	½ 00BD	¼ 00BC	¡ 00A1	« 00AB	» 00BB
B0	░ 2591	▒ 2592	▓ 2593	│ 2502	┤ 2524	Á 00C1	Â 00C2	À 00C0	© 00A9	╣ 2563	║ 2551	╗ 2557	╝ 255D	¢ 00A2	¥ 00A5	┐ 2510
C0	└ 2514	┴ 2534	┬ 252C	├ 251C	─ 2500	┼ 253C	ã 00E3	Ã 00C3	╚ 255A	╔ 2554	╩ 2569	╦ 2566	╠ 2560	═ 2550	╬ 256C	¤ 00A4
D0	ð 00F0	Ð 00D0	Ê 00CA	Ë 00CB	È 00C8	€ 20AC	Í 00CD	Î 00CE	Ï 00CF	┘ 2518	┌ 250C	█ 2588	▄ 2584	¦ 00A6	Ì 00CC	▀ 2580
E0	Ó 00D3	ß 00DF	Ô 00D4	Ò 00D2	õ 00F5	Õ 00D5	µ 00B5	þ 00FE	Þ 00DE	Ú 00DA	Û 00DB	Ù 00D9	ý 00FD	Ý 00DD	¯ 00AF	´ 00B4
F0	00AD	± 00B1	‗ 2017	¾ 00BE	¶ 00B6	§ 00A7	÷ 00F7	¸ 00B8	° 00B0	¨ 00A8	· 00B7	¹ 00B9	³ 00B3	² 00B2	■ 25A0	NBSP 00A0

Code Page 860

Code Page 861

Code Page 862

Code Page 863

Code Page 864

Code Page 865

Code Page 866

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	– 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80	А 0410	Б 0411	В 0412	Г 0413	Д 0414	Е 0415	Ж 0416	З 0417	И 0418	Й 0419	К 041A	Л 041B	М 041C	Н 041D	О 041E	П 041F
90	Р 0420	С 0421	Т 0422	У 0423	Ф 0424	Х 0425	Ц 0426	Ч 0427	Ш 0428	Щ 0429	Ъ 042A	Ы 042B	Ь 042C	Э 042D	Ю 042E	Я 042F
A0	а 0430	б 0431	в 0432	г 0433	д 0434	е 0435	ж 0436	з 0437	и 0438	й 0439	к 043A	л 043B	м 043C	н 043D	о 043E	п 043F
B0	░ 2591	▒ 2592	▓ 2593	│ 2502	┤ 2524	╡ 2561	╢ 2562	╖ 2556	╕ 2555	╣ 2563	║ 2551	╗ 2557	╝ 255D	╜ 255C	╛ 255B	┐ 2510
C0	└ 2514	┴ 2534	┬ 252C	├ 251C	─ 2500	┼ 253C	╞ 255E	╟ 255F	╚ 255A	╔ 2554	╩ 2569	╦ 2566	╠ 2560	═ 2550	╬ 256C	╧ 2567
D0	╨ 2568	╤ 2564	╥ 2565	╙ 2559	╘ 2558	╒ 2552	╓ 2553	╫ 256B	╪ 256A	┘ 2518	┌ 250C	█ 2588	▄ 2584	▌ 258C	▐ 2590	▀ 2580
E0	р 0440	с 0441	т 0442	у 0443	ф 0444	х 0445	ц 0446	ч 0447	ш 0448	щ 0449	ъ 044A	ы 044B	ь 044C	э 044D	ю 044E	я 044F
F0	Ё 0401	ё 0451	Є 0404	є 0454	Ї 0407	ї 0457	Ў 040E	ў 045E	° 00B0	∙ 2219	· 00B7	√ 221A	№ 2116	¤ 00A4	■ 25A0	NBSP 00A0

Code Page 869

Code Page 912

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	- 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80																
90																
A0	NBSP 00A0	Ą 0104	˘ 02D8	Ł 0141	¤ 00A4	Ľ 013D	Ś 015A	§ 00A7	¨ 00A8	Š 0160	Ş 015E	Ť 0164	Ź 0179	- 00AD	Ž 017D	Ż 017B
B0	° 00B0	ą 0105	˛ 02DB	ł 0142	´ 00B4	ľ 013E	ś 015B	ˇ 02C7	¸ 00B8	š 0161	ş 015F	ť 0165	ź 017A	˝ 02DD	ž 017E	ż 017C
C0	Ŕ 0154	Á 00C1	Â 00C2	Ă 0102	Ä 00C4	Ĺ 0139	Ć 0106	Ç 00C7	Č 010C	É 00C9	Ę 0118	Ë 00CB	Ě 011A	Í 00CD	Î 00CE	Ď 010E
D0	Đ 0110	Ń 0143	Ň 0147	Ó 00D3	Ô 00D4	Ő 0150	Ö 00D6	× 00D7	Ř 0158	Ů 016E	Ú 00DA	Ű 0170	Ü 00DC	Ý 00DD	Ţ 0162	ß 00DF
E0	ŕ 0155	á 00E1	â 00E2	ă 0103	ä 00E4	ĺ 013A	ć 0107	ç 00E7	č 010D	é 00E9	ę 0119	ë 00EB	ě 011B	í 00ED	î 00EE	ď 010F
F0	đ 0111	ń 0144	ň 0148	ó 00F3	ô 00F4	ő 0151	ö 00F6	÷ 00F7	ř 0159	ů 016F	ú 00FA	ű 0171	ü 00FC	ý 00FD	ţ 0163	˙ 02D9

Code Page 915

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	- 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80																
90																
A0	NBSP 00A0	Ё 0401	Ђ 0402	Ѓ 0403	Є 0404	Ѕ 0405	І 0406	Ї 0407	Ј 0408	Љ 0409	Њ 040A	Ћ 040B	Ќ 040C	- 00AD	Ў 040E	Џ 040F
B0	А 0410	Б 0411	В 0412	Г 0413	Д 0414	Е 0415	Ж 0416	З 0417	И 0418	Й 0419	К 041A	Л 041B	М 041C	Н 041D	О 041E	П 041F
C0	Р 0420	С 0421	Т 0422	У 0423	Ф 0424	Х 0425	Ц 0426	Ч 0427	Ш 0428	Щ 0429	Ъ 042A	Ы 042B	Ь 042C	Э 042D	Ю 042E	Я 042F
D0	а 0430	б 0431	в 0432	г 0433	д 0434	е 0435	ж 0436	з 0437	и 0438	й 0439	к 043A	л 043B	м 043C	н 043D	о 043E	п 043F
E0	р 0440	с 0441	т 0442	у 0443	ф 0444	х 0445	ц 0446	ч 0447	ш 0448	щ 0449	ъ 044A	ы 044B	ь 044C	э 044D	ю 044E	я 044F
F0	№ 2116	ё 0451	ђ 0452	ѓ 0453	є 0454	ѕ 0455	і 0456	ї 0457	ј 0458	љ 0459	њ 045A	ћ 045B	ќ 045C	§ 00A7	ў 045E	џ 045F

Code Page 916

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	− 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80																
90																
A0	NBSP 00A0		¢ 00A2	£ 00A3	¤ 00A4	¥ 00A5	¦ 00A6	§ 00A7	¨ 00A8	© 00A9	× 00D7	« 00AB	¬ 00AC	− 00AD	® 00AE	‾ 203E
B0	° 00B0	± 00B1	² 00B2	³ 00B3	´ 00B4	µ 00B5	¶ 00B6	· 00B7	¸ 00B8	¹ 00B9	÷ 00F7	» 00BB	¼ 00BC	½ 00BD	¾ 00BE	
C0																
D0																‗ 2017
E0	א 05D0	ב 05D1	ג 05D2	ד 05D3	ה 05D4	ו 05D5	ז 05D6	ח 05D7	ט 05D8	י 05D9	ך 05DA	כ 05DB	ל 05DC	ם 05DD	מ 05DE	ן 05DF
F0	נ 05E0	ס 05E1	ע 05E2	ף 05E3	פ 05E4	ץ 05E5	צ 05E6	ק 05E7	ר 05E8	ש 05E9	ת 05EA					

Code Page 919

Code Page 920

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	– 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80																
90																
A0	NBSP 00A0	¡ 00A1	¢ 00A2	£ 00A3	¤ 00A4	¥ 00A5	¦ 00A6	§ 00A7	¨ 00A8	© 00A9	ª 00AA	« 00AB	¬ 00AC	00AD	® 00AE	¯ 00AF
B0	° 00B0	± 00B1	² 00B2	³ 00B3	´ 00B4	µ 00B5	¶ 00B6	· 00B7	¸ 00B8	¹ 00B9	º 00BA	» 00BB	¼ 00BC	½ 00BD	¾ 00BE	¿ 00BF
C0	À 00C0	Á 00C1	Â 00C2	Ã 00C3	Ä 00C4	Å 00C5	Æ 00C6	Ç 00C7	È 00C8	É 00C9	Ê 00CA	Ë 00CB	Ì 00CC	Í 00CD	Î 00CE	Ï 00CF
D0	Ğ 011E	Ñ 00D1	Ò 00D2	Ó 00D3	Ô 00D4	Õ 00D5	Ö 00D6	× 00D7	Ø 00D8	Ù 00D9	Ú 00DA	Û 00DB	Ü 00DC	İ 0130	Ş 015E	ß 00DF
E0	à 00E0	á 00E1	â 00E2	ã 00E3	ä 00E4	å 00E5	æ 00E6	ç 00E7	è 00E8	é 00E9	ê 00EA	ë 00EB	ì 00EC	í 00ED	î 00EE	ï 00EF
F0	ğ 011F	ñ 00F1	ò 00F2	ó 00F3	ô 00F4	õ 00F5	ö 00F6	÷ 00F7	ø 00F8	ù 00F9	ú 00FA	û 00FB	ü 00FC	ı 0131	ş 015F	ÿ 00FF

Code Page 929

Code Page 1004

Code Page 1040

Code Page 1041

Code Page 1046

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	– 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80																
90																
A0	NBSP 00A0				※ 00A4								، 060C	— 00AD		
B0												؛ 061B				؟ 061F
C0		ء 0621	آ 0622	أ 0623	ؤ 0624	إ 0625	ئ 0626	ا 0627	ب 0628	ة 0629	ت 062A	ث 062B	ج 062C	ح 062D	خ 062E	د 062F
D0	ذ 0630	ر 0631	ز 0632	س 0633	ش 0634	ص 0635	ض 0636	ط 0637	ظ 0638	ع 0639	غ 063A					
E0	ـ 0640	ف 0641	ق 0642	ك 0643	ل 0644	م 0645	ن 0646	ه 0647	و 0648	ى 0649	ي 064A	ً 064B	ٌ 064C	ٍ 064D	َ 064E	ُ 064F
F0	ِ 0650	ّ 0651	ْ 0652													

Code Page 1053

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	- 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B		007C	} 007D	~ 007E	DEL 007F
80																
90																
A0	NBSP 00A0	¡ 00A1	¢ 00A2	£ 00A3	¤ 00A4	¥ 00A5	¦ 00A6	§ 00A7	¨ 00A8	© 00A9	ª 00AA	« 00AB	¬ 00AC	00AD	® 00AE	¯ 00AF
B0	° 00B0	± 00B1	² 00B2	³ 00B3	´ 00B4	µ 00B5	¶ 00B6	· 00B7	¸ 00B8	¹ 00B9	º 00BA	» 00BB	¼ 00BC	½ 00BD	¾ 00BE	¿ 00BF
C0	À 00C0	Á 00C1	Â 00C2	Ã 00C3	Ä 00C4	Å 00C5	Æ 00C6	Ç 00C7	È 00C8	É 00C9	Ê 00CA	Ë 00CB	Ì 00CC	Í 00CD	Î 00CE	Ï 00CF
D0	Ð 00D0	Ñ 00D1	Ò 00D2	Ó 00D3	Ô 00D4	Õ 00D5	Ö 00D6	× 00D7	Ø 00D8	Ù 00D9	Ú 00DA	Û 00DB	Ü 00DC	Ý 00DD	Þ 00DE	ß 00DF
E0	à 00E0	á 00E1	â 00E2	ã 00E3	ä 00E4	å 00E5	æ 00E6	ç 00E7	è 00E8	é 00E9	ê 00EA	ë 00EB	ì 00EC	í 00ED	î 00EE	ï 00EF
F0	ð 00F0	ñ 00F1	ò 00F2	ó 00F3	ô 00F4	õ 00F5	ö 00F6	÷ 00F7	ø 00F8	ù 00F9	ú 00FA	û 00FB	ü 00FC	ý 00FD	þ 00FE	ÿ 00FF

Code Page 1098

Code Page 1116

Code Page 1198

Code Page 1250

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	− 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80	€ 20AC		‚ 201A		„ 201E	… 2026	† 2020	‡ 2021		‰ 2030	Š 0160	‹ 2039	Ś 015A	Ť 0164	Ž 017D	Ź 0179
90		' 2018	' 2019	" 201C	" 201D	• 2022	– 2013	— 2014		™ 2122	š 0161	› 203A	ś 015B	ť 0165	ž 017E	ź 017A
A0	NBSP 00A0	ˇ 02C7	˘ 02D8	Ł 0141	¤ 00A4	Ą 0104	¦ 00A6	§ 00A7	¨ 00A8	© 00A9	Ş 015E	« 00AB	¬ 00AC	00AD	® 00AE	Ż 017B
B0	° 00B0	± 00B1	˛ 02DB	ł 0142	´ 00B4	µ 00B5	¶ 00B6	· 00B7	¸ 00B8	ą 0105	ş 015F	» 00BB	Ľ 013D	˝ 02DD	ľ 013E	ż 017C
C0	Ŕ 0154	Á 00C1	Â 00C2	Ă 0102	Ä 00C4	Ĺ 0139	Ć 0106	Ç 00C7	Č 010C	É 00C9	Ę 0118	Ë 00CB	Ě 011A	Í 00CD	Î 00CE	Ď 010E
D0	Đ 0110	Ń 0143	Ň 0147	Ó 00D3	Ô 00D4	Ő 0150	Ö 00D6	× 00D7	Ř 0158	Ů 016E	Ú 00DA	Ű 0170	Ü 00DC	Ý 00DD	Ţ 0162	ß 00DF
E0	ŕ 0155	á 00E1	â 00E2	ă 0103	ä 00E4	ĺ 013A	ć 0107	ç 00E7	č 010D	é 00E9	ę 0119	ë 00EB	ě 011B	í 00ED	î 00EE	ď 010F
F0	đ 0111	ń 0144	ň 0148	ó 00F3	ô 00F4	ő 0151	ö 00F6	÷ 00F7	ř 0159	ů 016F	ú 00FA	ű 0171	ü 00FC	ý 00FD	ţ 0163	˙ 02D9

Code Page 1251

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	− 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80	Ђ 0402	Ѓ 0403	‚ 201A	ѓ 0453	„ 201E	… 2026	† 2020	‡ 2021	€ 20AC	‰ 2030	Љ 0409	‹ 2039	Њ 040A	Ќ 040C	Ћ 040B	Џ 040F
90	ђ 0452	' 2018	' 2019	" 201C	" 201D	• 2022	– 2013	— 2014		™ 2122	љ 0459	› 203A	њ 045A	ќ 045C	ћ 045B	џ 045F
A0	NBSP 00A0	Ў 040E	ў 045E	Ј 0408	¤ 00A4	Ґ 0490	¦ 00A6	§ 00A7	Ё 0401	© 00A9	Є 0404	« 00AB	¬ 00AC	− 00AD	® 00AE	Ї 0407
B0	° 00B0	± 00B1	І 0406	і 0456	ґ 0491	µ 00B5	¶ 00B6	· 00B7	ё 0451	№ 2116	є 0454	» 00BB	ј 0458	Ѕ 0405	ѕ 0455	ї 0457
C0	А 0410	Б 0411	В 0412	Г 0413	Д 0414	Е 0415	Ж 0416	З 0417	И 0418	Й 0419	К 041A	Л 041B	М 041C	Н 041D	О 041E	П 041F
D0	Р 0420	С 0421	Т 0422	У 0423	Ф 0424	Х 0425	Ц 0426	Ч 0427	Ш 0428	Щ 0429	Ъ 042A	Ы 042B	Ь 042C	Э 042D	Ю 042E	Я 042F
E0	а 0430	б 0431	в 0432	г 0433	д 0434	е 0435	ж 0436	з 0437	и 0438	й 0439	к 043A	л 043B	м 043C	н 043D	о 043E	п 043F
F0	р 0440	с 0441	т 0442	у 0443	ф 0444	х 0445	ц 0446	ч 0447	ш 0448	щ 0449	ъ 044A	ы 044B	ь 044C	э 044D	ю 044E	я 044F

Code Page 1257

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	NUL 0000	STX 0001	SOT 0002	ETX 0003	EOT 0004	ENQ 0005	ACK 0006	BEL 0007	BS 0008	HT 0009	LF 000A	VT 000B	FF 000C	CR 000D	SO 000E	SI 000F
10	DLE 0010	DC1 0011	DC2 0012	DC3 0013	DC4 0014	NAK 0015	SYN 0016	ETB 0017	CAN 0018	EM 0019	SUB 001A	ESC 001B	FS 001C	GS 001D	RS 001E	US 001F
20	SP 0020	! 0021	" 0022	# 0023	$ 0024	% 0025	& 0026	' 0027	(0028	) 0029	* 002A	+ 002B	, 002C	– 002D	. 002E	/ 002F
30	0 0030	1 0031	2 0032	3 0033	4 0034	5 0035	6 0036	7 0037	8 0038	9 0039	: 003A	; 003B	< 003C	= 003D	> 003E	? 003F
40	@ 0040	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048	I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F
50	P 0050	Q 0051	R 0052	S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	[005B	\ 005C	] 005D	^ 005E	_ 005F
60	` 0060	a 0061	b 0062	c 0063	d 0064	e 0065	f 0066	g 0067	h 0068	i 0069	j 006A	k 006B	l 006C	m 006D	n 006E	o 006F
70	p 0070	q 0071	r 0072	s 0073	t 0074	u 0075	v 0076	w 0077	x 0078	y 0079	z 007A	{ 007B	| 007C	} 007D	~ 007E	DEL 007F
80	€ 20AC		‚ 201A		„ 201E	… 2026	† 2020	‡ 2021		‰ 2030		‹ 2039		¨ 00A8	ˇ 02C7	¸ 00B8
90		' 2018	' 2019	" 201C	" 201D	• 2022	– 2013	— 2014		™ 2122		› 203A		¯ 00AF	˛ 02DB	
A0	NBSP 00A0		¢ 00A2	£ 00A3	¤ 00A4		¦ 00A6	§ 00A7	Ø 00D8	© 00A9	Ŗ 0156	« 00AB	¬ 00AC	– 00AD	® 00AE	Æ 00C6
B0	° 00B0	± 00B1	² 00B2	³ 00B3	´ 00B4	µ 00B5	¶ 00B6	· 00B7	ø 00F8	¹ 00B9	ŗ 0157	» 00BB	¼ 00BC	½ 00BD	¾ 00BE	æ 00E6
C0	Ą 0104	Į 012E	Ā 0100	Ć 0106	Ä 00C4	Å 00C5	Ę 0118	Ē 0112	Č 010C	É 00C9	Ź 0179	Ė 0116	Ģ 0122	Ķ 0136	Ī 012A	Ļ 013B
D0	Š 0160	Ń 0143	Ņ 0145	Ó 00D3	Ō 014C	Õ 00D5	Ö 00D6	× 00D7	Ų 0172	Ł 0141	Ś 015A	Ū 016A	Ü 00DC	Ż 017B	Ž 017D	ß 00DF
E0	ą 0105	į 012F	ā 0101	ć 0107	ä 00E4	å 00E5	ę 0119	ē 0113	č 010D	é 00E9	ź 017A	ė 0117	ģ 0123	ķ 0137	ī 012B	ļ 013C
F0	š 0161	ń 0144	ņ 0146	ó 00F3	ō 014D	õ 00F5	ö 00F6	÷ 00F7	ų 0173	ł 0142	ś 015B	ū 016B	ü 00FC	ż 017C	ž 017E	˙ 02D9

Code Page 1852

Code Page 1855

Code Page 1862

Code Page 1866

Code Page 2852

Code Page 2866

Code Page 3852

Code Page 4852

APPENDIX A: Code Page Table

change

The 2500 series forms printers include support for a variety of code pages. See the following table for a complete list.

Code page 437 (U.S. English) is the factory default code page.

The following conventions are used to identify code pages and are supplied as a cross reference for users to more easily locate support information, no matter which convention is used:

- Code Page - refers to the commonly used code page number.
- IBM Code Page - refers to the code page number commonly used by IBM.
- Op Panel Menu - refers to the code page identifier on the printer operator panel.
- Name - refers to the commonly used code page name.
- Hexadecimal and Decimal Hc/Lc codes - values are utilized in escape sequences found throughout this technical reference.
- Translations - Supported translations are listed by column. The presence of a printer model family (258x or 259x) indicates that code page/translation combination is supported on that printer family.

Table A-1: Code Page Table (Sheet 1 of 3)

Character Set	Code Page	IBM Code Page	Op Panel Menu	Name	Decimal Hc	Decimal Lc	Hexadecimal Hc	Hexadecimal Lc	Std / OCR-B	Arabic	Baltic	Eastern European	Levant	OKI
Latin-1	437	437	437	IBM PC US	1	181	01	B5	258x & 259x	258x & 259x	258x & 259x	258x & 259x	258x & 259x	258x only
	850	850	850	IBM PC Multilingual	3	82	03	52	258x & 259x	258x & 259x	258x & 259x	258x & 259x	258x & 259x	258x only
	858	858	858	PC Multi. Euro	3	82	03	5A	258x & 259x	258x & 259x	258x & 259x	258x & 259x	258x & 259x	
	860	860	860	PC Portuguese	3	92	03	5C	258x & 259x					258x only
	861	861	861	PC Iceland	3	93	03	5D	258x & 259x					
	863	863	863	PC Canadian	3	95	03	5F	258x & 259x					258x only
	865	865	865	PC 865 D/N	3	97	03	61	258x & 259x					258x only
	1004	1004	1004	IBM PC OS/2	3	236	03	EC	258x & 259x					
	1053	1053	1053	ISO 8859-1 Latin-1	4	29	04	1D	258x & 259x					
Latin-2	852	852	852	PC 852	3	84	03	54				258x & 259x		
	912	912	IL2	ISO 8859-2 Latin-2	3	144	03	90				258x & 259x		
	1250	1250	WL2	Windows Latin-2	4	226	04	E2				258x & 259x		
	1852	10852	CWI	CWI	42	100	2A	64				258x & 259x		
	2852	11852	KAM	Kamenicky	46	76	2E	4C				258x & 259x		
	3852	12852	MAZ	Mazovia	50	52	32	34				258x & 259x		
	4852	13852	NOV	PC Nova	54	28	36	1C				258x & 259x		
Latin-5	853T	10853	853T	Old PC Turkish	42	101	2A	65	258x & 259x					258x only
	857	857	857	PC Turkish	3	89	03	59	258x & 259x					258x only
	920	920	920	ISO 8859-9 Latin-5	3	152	03	98	258x & 259x					258x only

Table A-1: Code Page Table (Continued) (Sheet 2 of 3)

Character Set	Code Page	IBM Code Page	Op Panel Menu	Name	Decimal Hc	Decimal Lc	Hexadecimal Hc	Hexadecimal Lc	Std / OCR-B	Arabic	Baltic	Eastern European	Levant	OKI
Latin-6	771	771	KBL	PC-771	3	3	03	03			258x & 259x			
	773	773	773	PC-773	3	5	03	05			258x & 259x			
	775	775	775	PC-775	3	7	03	07			258x & 259x			
	918	1118	774	PC-774	4	94	04	5E			258x & 259x			
	919	919	IL6	ISO 8859-10 Latin-6	3	151	03	97			258x & 259x			
	929	929	772	PC-772	4	95	04	5F			258x & 259x			
	1116	1116	EST	Estonia	4	92	04	5C			258x & 259x			
	1257	1257	WBL	Windows Baltic	4	233	04	E9			258x & 259x			
	2866	11866	LAT	PC-886LAT	46	90	2E	5A			258x & 259x			
Cyrillic	855	855	855	PC Cyrillic	3	87	03	57				258x & 259x		
	866	866	866	PC Russia	3	97	03	62				258x & 259x	258x & 259x	
	915	915	ICYR	ISO 8859-5 Cyrillic	3	147	03	93				258x & 259x	258x & 259x	
	1251	1251	WCYR	Windows Cyrillic	4	227	04	E3				258x & 259x	258x & 259x	
	1855	10855	BULG	Bulgaria	42	103	2A	67					258x & 259x	
	1866	10866	UKR	Ukraine	42	114	2A	72				258x & 259x	258x & 259x	
Greek	437G	10437	437G	PC 437 Greek	40	197	28	C5	258x & 259x					258x only
	813	813	813	ISO 8859-7 Greek	3	45	03	2D	258x & 259x					258x only
	851	851	851	PC Greek	3	83	03	53	258x & 259x					258x only
	869	869	869	IBM PC Greek	3	101	03	62	258x & 259x					258x only
Arabic	449P	10449	449+	Arabic (ASMO 449+)	40	209	28	D1		258x & 259x				
	708	708	708	Arabic (ASMO 708)	2	196	02	C4		258x & 259x				
	720	720	720	Arabic (DOS)	2	208	02	D0		258x & 259x				
	864	864	864	IBM PC Arabic	3	96	03	60		258x & 259x				
	1046	1046	1046	ISO 8859-6 Arabic	4	22	04	16		258x & 259x			258x & 259x	
	1098	1098	1098	IBM PC Farsi	4	74	04	4A		258x & 259x			258x & 259x	
	1198	1198	11098	N/A	4	174	04	AE		258x only			258x only	

Table A-1: Code Page Table (Continued) (Sheet 3 of 3)

| Character Set | Code Page | IBM Code Page | Op Panel Menu | Name | Decimal | | Hexadecimal | | Translations | | | | | |
					Hc	Lc	Hc	Lc	Std / OCR-B	Arabic	Baltic	Eastern European	Levant	OKI
Hebrew	856		856	AIX Hebrew	3	88	03	58					258x & 259x	
	862		862	IBM PC Hebrew	3	94	03	5E					258x & 259x	
	916		916	ISO 8859-8	3	148	03	94					258x & 259x	
	1862		10862	Hebrew-7	42	110	2A	6E					258x & 259x	
OKI	850B	11850	850B	850B	46	74	2E	4A						258x only
	1040	1040	BRASCII	BRASCII	4	16	04	10						258x only
	1041	1041	Abicomp	Abicomp	4	17	04	11						258x only