PRINTRONIX®

KS Emulation

Programmer's Reference Manual

Line Matrix Series H-Series Printers

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Table of Contents

1 *Introduction*

About this Manual

This manual is designed so you can quickly find the information you need to operate your printer with the Korean Standard (KS) emulation.

This book does not explain how to operate the printer. For printer operation, see the *User's Manual.*

Warnings and Special Information

Read and comply with all information highlighted under special headings:

WARNING **Conditions that could harm you.**

CAUTION **Conditions that could damage the printer or related equipment.**

IMPORTANT **Information vital to proper operation of the printer.**

NOTE: Information affecting printer operation.

Related Product Information

Refer to the following book for printer operation:

- *User's Manual.* Provides configuration instructions, descriptions, and troubleshooting guidelines. Also describes the keys on the control panel and provides quick reference information on daily printer operations such as loading paper and replacing ribbons.

Software Features

The KS emulation software provides the following features:

- Graphics and print quality. You can enable graphics mode and specify a density mode (dots per inch), for either 8-pin or 24-pin images.
- Print Attributes. Characters can be bold, italic, double high, double wide, etc.
- Page Formatting. Commands which allow you to set line spacing, page length, and vertical tabbing.
- Font Typefaces. Also referred to as print modes. The six typefaces are LQ, Near LQ, Normal, Hi-Speed, Super Hi-Speed, and Ultra Hi-Speed.

2 Configuration with the Control Panel

Introduction

IMPORTANT **Configuration directly affects printer operation. Do not change the configuration of your printer until you are thoroughly familiar with the procedures in this chapter.**

In order to print data, the printer must respond correctly to signals and commands received from the host computer. Configuration is the process of matching the printer's operating characteristics to those of the host computer and to specific tasks, such as printing labels or printing on different sizes of paper. The characteristics that define the printer's response to signals and commands received from the host computer are called configuration parameters. Examples are line spacing, form length, etc.

You can change the parameters by sending appropriate control codes, or by pressing keys on the control panel. Control codes offer more versatility, and they override control panel settings.

This chapter explains how to use the control panel.

Chapter 3 provides information about control codes.

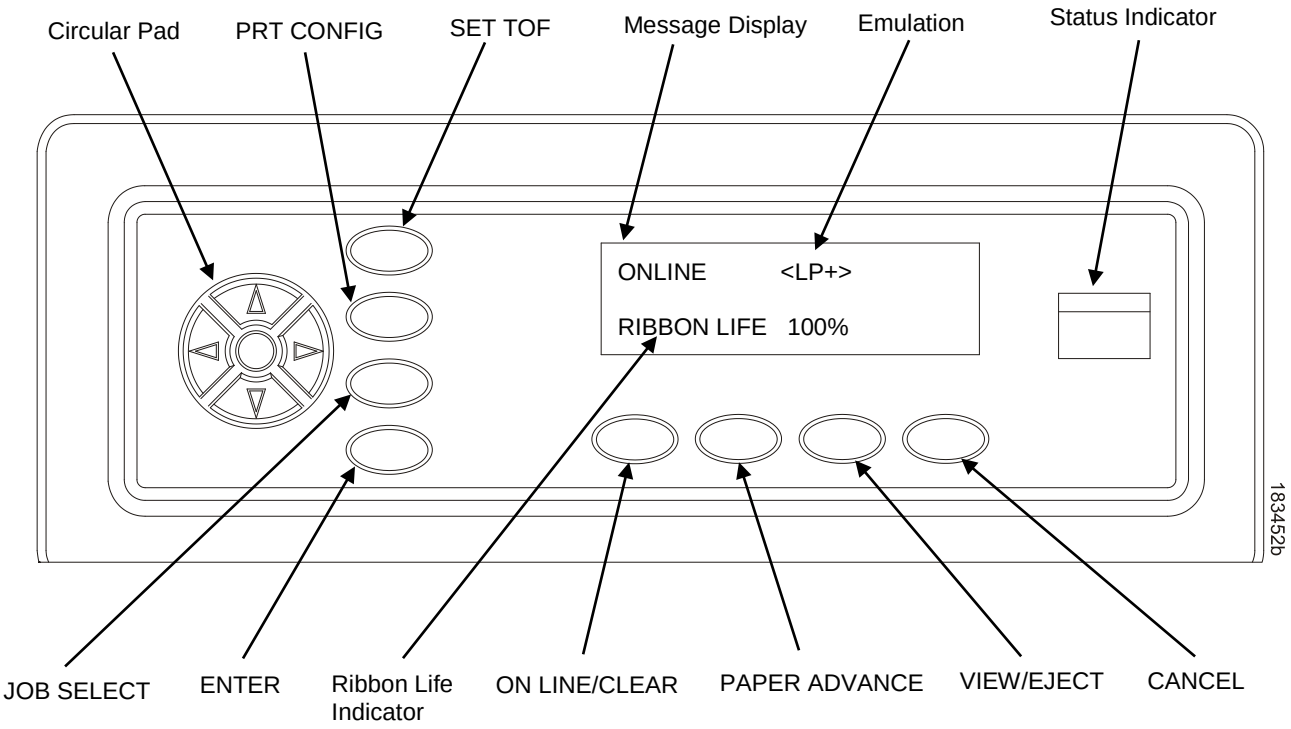
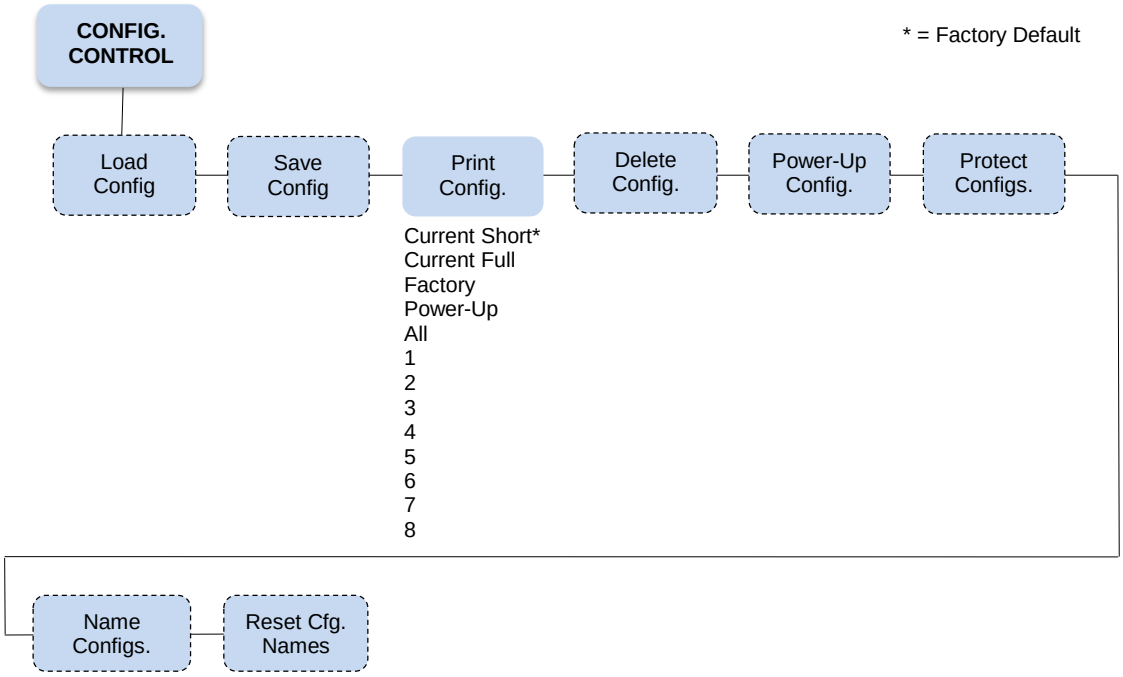


Figure 1 The Control Panels

Printing the Configuration



It is recommended you print a configuration to determine what is already stored and what needs to be modified.

You can print any or all of the configurations shown above. Configurations 1-8 are the customized configurations.

To print a configuration, follow the procedure in Table 1.

Table 1 Printing Configurations

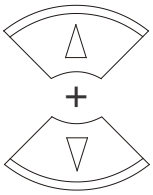
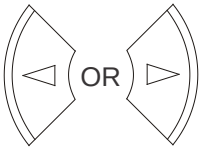
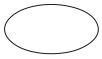
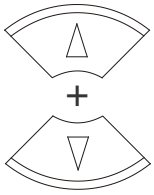
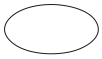
Step	Key	Result	Notes
1.	Make sure the printer is on.		
2.	ON LINE/CLEAR 	OFFLINE QUICK SETUP	
3.		ENTER SWITCH UNLOCKED OFFLINE QUICK SETUP	Allows you to make configuration changes.
4.		OFFLINE CONFIG. CONTROL	
5.		CONFIG. CONTROL Load Config.	
6.	 UNTIL	CONFIG. CONTROL Print Config.	
7.		Print Config. Current Short*	
8.		Print Config. All	Press until the desired option displays.
9.	ENTER 	OFFLINE CONFIG. CONTROL	The configuration listing begins printing.
10.	Carefully tear off the configuration printout.		

Table 1 Printing Configurations

Step	Key	Result	Notes
11.		ENTER SWITCH LOCKED	Locks the ENTER key.
12.	ON LINE/CLEAR 	ONLINE	
13.	Store the printout in a safe place. The printer is ready for operation.		

NOTE: Another way to print the current configuration is to go OFFLINE, press the PRT CONFIG key, and then press ENTER.

The Configuration Menu

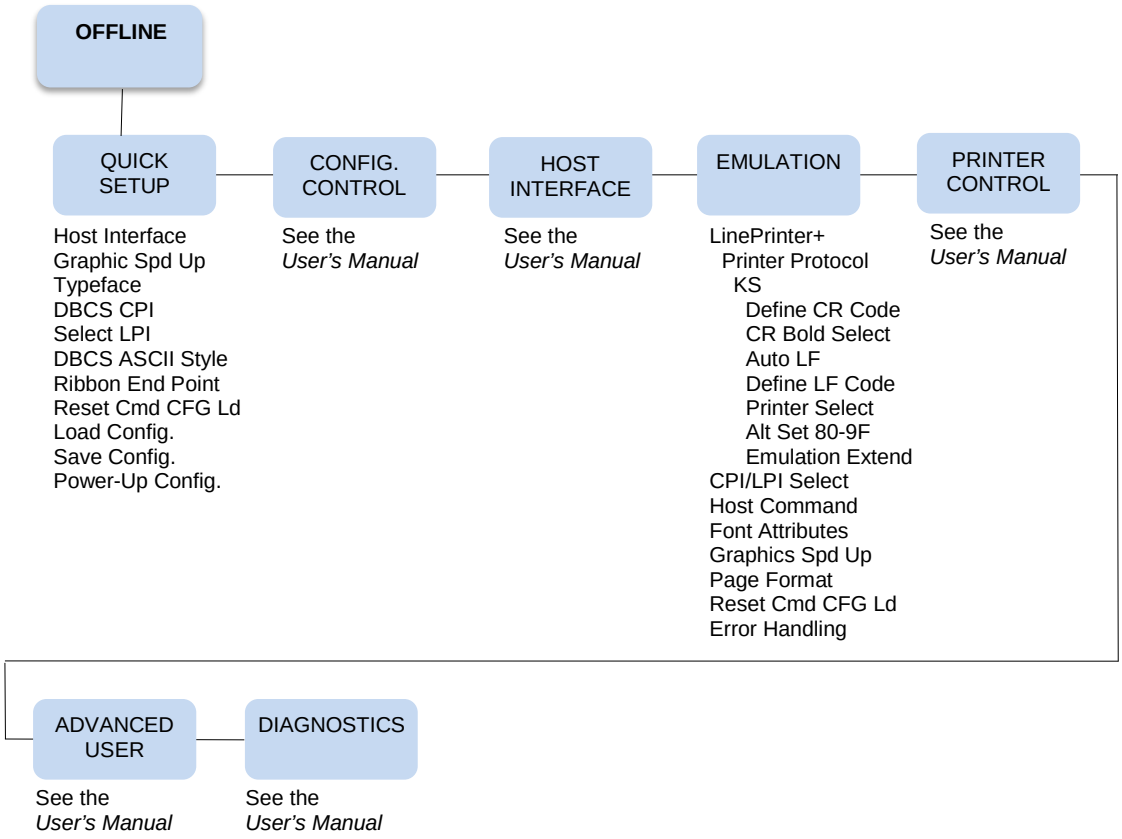


Figure 2 Configuration Menu Overview

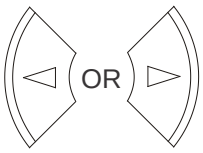
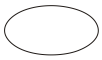
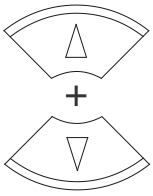
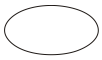
Moving within the Configuration Menu

The example in Table 2 explains how to change the LPI value.

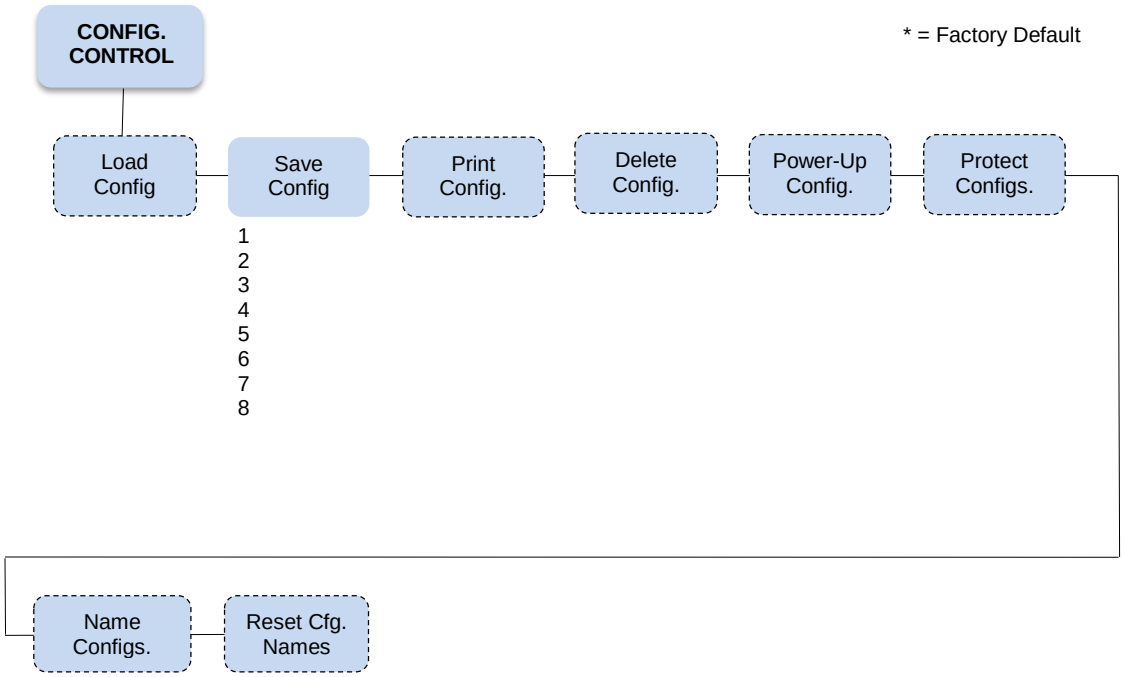
Table 2 Changing Configurations

Step	Key	Result	Notes
1.	Make sure the printer is on.		
2.	ON LINE/CLEAR 	OFFLINE QUICK SETUP	
3.	 + 	ENTER SWITCH UNLOCKED OFFLINE CONFIG. CONTROL	Allows you to make configuration changes.
4.	 UNTIL	OFFLINE EMULATION	
5.		EMULATION LinePrinter+	
6.		LinePrinter+ Printer Protocol	
7.		LinePrinter+ CPI/LPI Select	
8.		CPI/LPI Select Select LPI	
9.		Select LPI 6.0 LPI*	

Table 2 Changing Configurations

Step	Key	Result	Notes
10.		Select LPI 8.0 LPI	Press until the desired value displays.
11.	ENTER 	Select LPI 8.0 LPI*	An asterisk indicates the value selected.
12.	Use the diagrams on the following pages to navigate your way through the menu. Press ▲ or ▼ to move vertically; press ◀ or ▶ to move horizontally and to scroll through the values. Press ENTER to select a value. Press ONLINE/CLEAR, to move to the top of the menu.		
To SAVE CHANGES AS A CONFIGURATION that is stored in memory and can be loaded later:			
13.	 UNTIL	OFFLINE EMULATION	
14.	 UNTIL	OFFLINE CONFIG. CONTROL	
15.			
16.		ENTER SWITCH LOCKED	Locks the configuration parameters.
17.	ON LINE/CLEAR 	ONLINE	
18.	The printer is ready for operation. All parameters are effective as long as the printer is on. When you turn off the printer, the parameters will be erased from memory.		

Saving Your New Configuration



After changing all of the necessary parameters, it is recommended you save them as a configuration that can be stored for future use and loaded later. If you do not save your configuration before you power off the printer, all of your parameter changes will be erased. The Save Config. option allows you to save up to eight configurations to meet different print job requirements. Configurations 1 through 8 are empty until you save values to them using the Save Config. option. For example:

Config 1: Selects LQ typeface, 5 cpi, 6 lpi

Config 2: Selects Near LQ typeface, 6 cpi, 8 lpi

Once you have saved a configuration using this option, it will not be lost if you power off the printer. You can load a configuration for a specific print job and modify and resave it. You may want to print your configurations and store them in a safe place, such as inside the printer cabinet.

NOTE: The Protect Configs. parameter must be set to disable before you can save a configuration. Once you save a configuration, the Protect Configs. parameter automatically returns to enable. Once you change active emulations, any changes to the previously selected emulation will be gone unless they have been saved.

Table 3 Saving Configurations

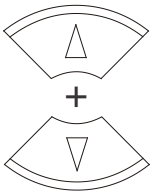
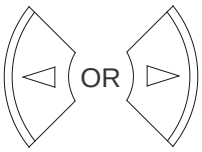
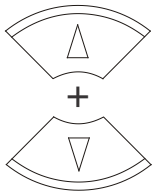
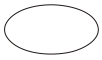
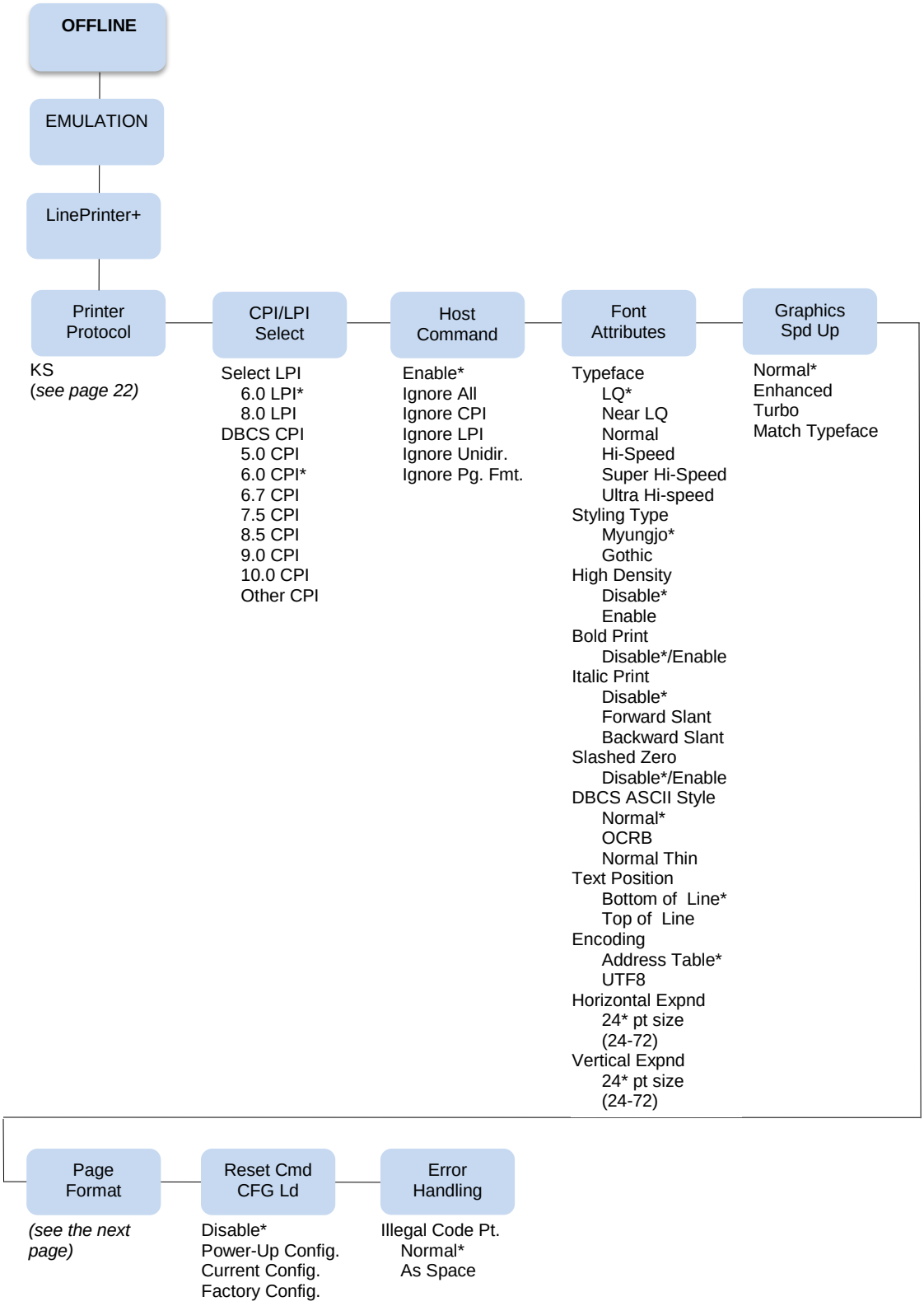
Step	Key	Result	Notes
1.	If you are already in the configuration menu, go to step 5.		
2.	ON LINE/CLEAR 	OFFLINE QUICK SETUP	
3.		ENTER SWITCH UNLOCKED OFFLINE QUICK SETUP	Allows you to make configuration changes.
4.		OFFLINE CONFIG. CONTROL	
5.		CONFIG. CONTROL Load Config.	
6.		CONFIG. CONTROL Save Config.	
7.		Save Config. 1*	
8.		Save Config. 2	Press until the desired number (1-8) displays.
NOTE: Do not turn off the printer while Save is in progress because you might lose your configuration.			
9.	ENTER 	Save Config. 2*	The configuration is now saved in memory. (In this case, config. 2.)
10.	 UNTIL	CONFIG. CONTROL Save Config.	

Table 3 Saving Configurations

Step	Key	Result	Notes
NOTE:	It is recommended you print the configuration. Go to page 11, step 5. If you decide not to print the configuration, then continue with the following steps.		
11.		ENTER SWITCH LOCKED	Locks the ENTER key.
12.	ON LINE/CLEAR 	ONLINE	
13.	The printer is ready for operation.		

LinePrinter Plus Menu



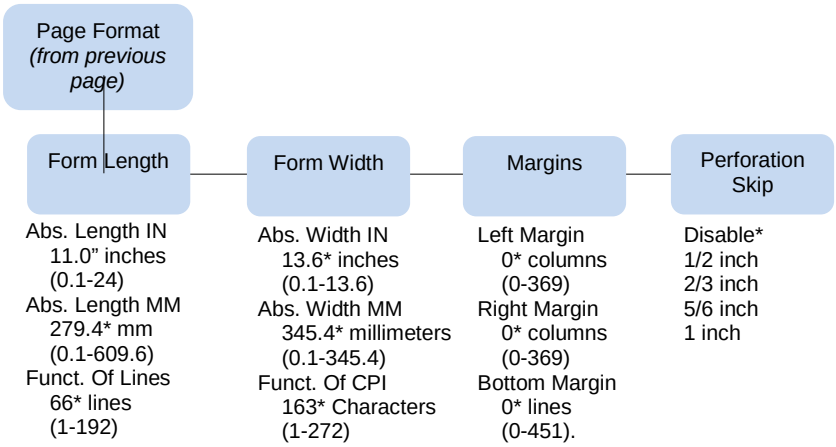


Figure 3 LinePrinter Plus Menu

CPI/LPI Select

This parameter lets you specify the characters per inch (cpi) and lines per inch (lpi) values. The defaults are 6 lpi and 6 cpi.

Host Command

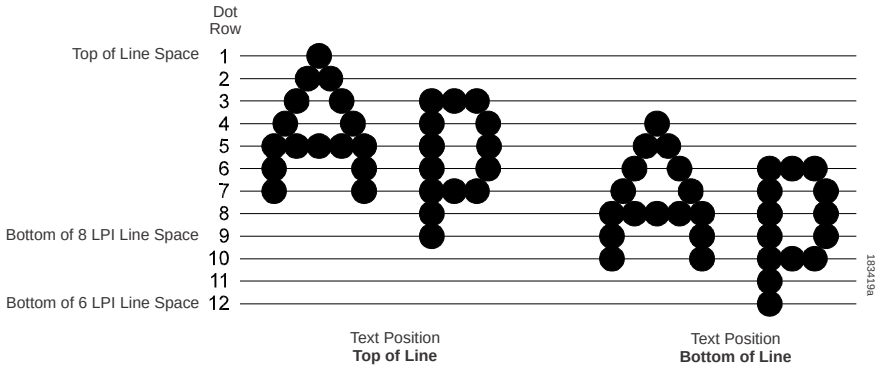
- **Enable**. The default. Enables all host printing commands.
- **Ignore All**. This function treats all control codes and printing commands as the data.
- **Ignore CPI**. This function ignores the CPI selection commands only.
- **Ignore LPI**. This function ignores the LPI selection commands only (e.g., ESC 2 and ESC 0).
- **Ignore Unidir**. All unidirectional commands sent by the host are ignored by the printer.
- **Ignore Pg. Fmt**. This function ignores all the page format setting commands sent from the host.

Font Attributes

This submenu allows you to define the following font attributes: typeface, bold print, and italic print. You can also specify if the ASCII character will print with the OCRB mode.

High Density enabled will allow the LQ typeface to print in higher print density. It will not take effect when other typefaces are selected.

Text position specifies where the text will be positioned in the line space. When set to Top of Line, text will be positioned at the top of the line space. When set to Bottom of Line, the text will be positioned as if it were at the bottom of a 6 lpi line space. The following example shows both Top of Line and Bottom of Line text positions:



The option "Address Table" specifies the address table supported: KSC5601. The option "UTF8" allows users to input UTF8 data stream.

The option "Horizontal Expnd" specifies the character horizontal expansion in dot for both ASCII and DBCS characters in DBCS mode.

The option "Vertical Expnd" specifies the character vertical expansion in dot for both ASCII and DBCS characters in DBCS mode.

Graphics Spd Up

This menu is used to increase (speed up) graphic printing speed by turning on the Enhanced/Turbo mode.

- **Normal**. The default. The printer prints at the given input graphics resolution.
- **Enhanced**. The printer provides first-level speed up, which means the speed is faster than Normal mode.
- **Turbo**. The printer provides second-level speed up, which means the speed is faster than Enhanced mode.
- **Match Typeface**. The input 180x180 dpi graphics resolution will drop-dot to the resolution that matches the typeface selected.

Page Format

Form Length

Forms length is the number of lines that can be printed on a page. You can set forms length in inches or in print lines per page. The most accurate method is lines per page.

Form Width

When using paper that is 8 1/2 inches wide, selecting an 8-inch print width prevents printing beyond the right margin and damaging the hammer tips and platen.

Margins

You can set the bottom, left, and right form margins.

Perforation Skip

Perforation Skip allows or prevents printing on the page perforation. When enabled, it sets up a skip-over margin of 1/2," 2/3," 5/6," or 1." For example, a skip-over margin of 1" allows a 1" margin at the bottom of the page perforation. The default is Disable.

Reset Cmd CFG Ld

When the printer receives a host data stream reset command (ESC @ or ESC[K) in addition to resetting printer variables, the selected configuration will be loaded.

- **Disable**. The default. The active emulation parameters are loaded when the reset command is executed.
- **Power-Up Config**. The power-up configuration is loaded when the reset command is executed.
- **Current Config**. The currently selected configuration is loaded when the reset command is executed.
- **Factory Config**. The factory installed configuration is loaded when the reset command is executed.

Error Handling of Illegal Code Point

This command determines the way illegal DBCS characters are processed:

- **Normal**. The default. Will ignore illegal DBCS characters.
- **As Space**. Will insert two space characters (0X20, 0X20) when the data stream contains error DBCS coding.

KS Emulation

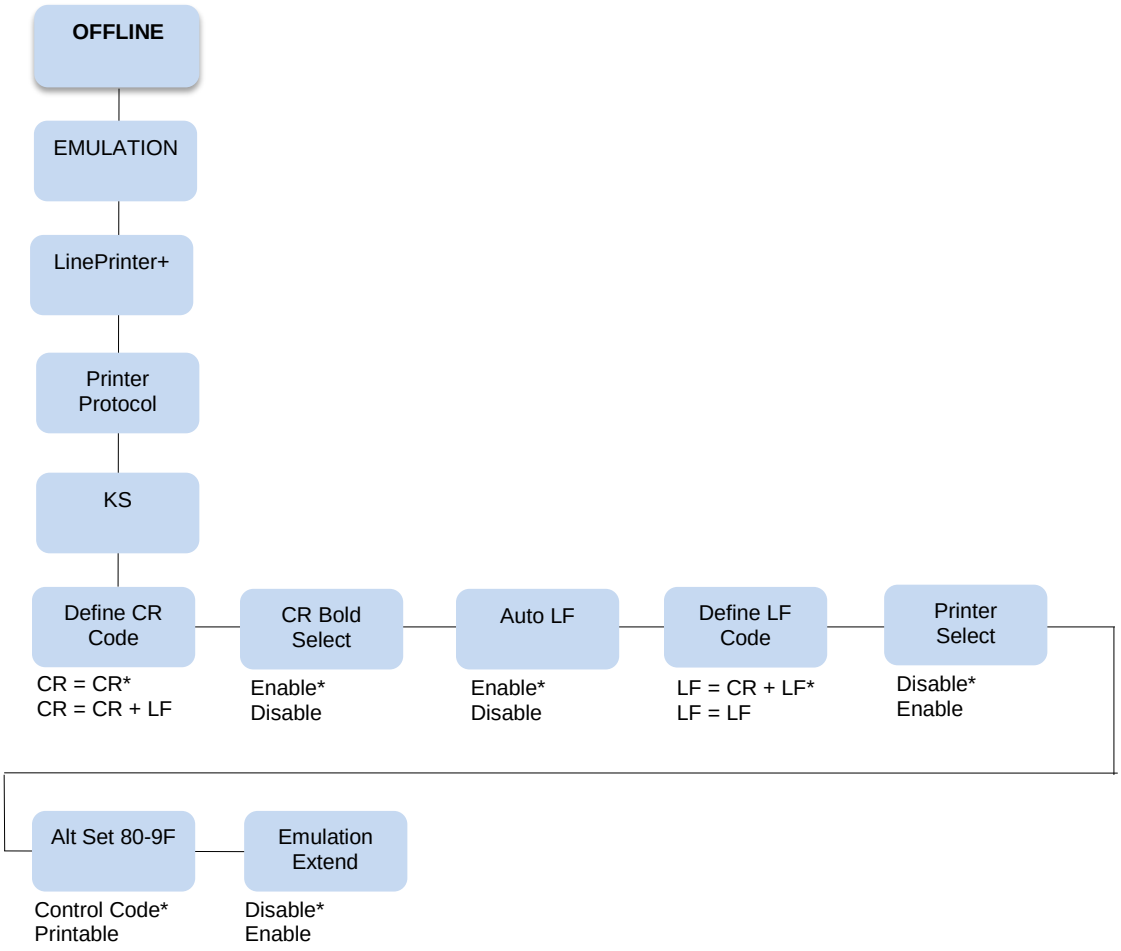


Figure 4 KS Emulation Menu

Define CR Code

The Define CR code option controls the action of the printer when it receives a Carriage Return code (hex 0D) from the host computer. If this feature is enabled, each time the printer receives a Carriage Return, it inserts an additional Line Feed code (hex 0A) into the data stream. Do not use this feature if the host computer sends Line Feeds to the printer.

- **CR = CR**. Does not insert an extra Line Feed after each Carriage Return.
- **CR = CR + LF**. Inserts an extra Line Feed after each Carriage Return.

CR Bold Select

This option determines whether CR (0x0D) will turn on the bold attribute.

- **Enable**. The text after CR will be printed as bold together with the text before CR.
- **Disable**. Normal CR function.

Auto LF

This option defines the printer actions when print data is received past the forms width setting.

- **Enable**. Performs an automatic carriage return and line feed when data is received past the forms width.
- **Disable**. Discards any data past the forms width.

Define LF Code

The Define LF code option controls the action of the printer when it receives a Line Feed code (hex 0A) from the host computer. If this feature is enabled, each time the printer receives a Line Feed, it inserts an additional Carriage Return code (hex 0D) into the data stream. This feature can be used in most installations, but it is required if the host computer does not send Carriage Returns to the printer.

- **LF = CR + LF**. Adds an extra Carriage Return with each Line Feed.
- **LF = LF**. Does not add a Carriage Return with a Line Feed.

Printer Select

- **Disable**. Ignores the ASCII DC1 and DC3 control codes.
- **Enable**. Disables the printer when a DC1 control code is received, and enables the printer when a DC3 control code is received.

Alt. Set 80-9F

- **Control Code**. Interprets data in the range of hex 80 through hex 9F as a control code.
- **Printable**. Prints data in the range of hex 80 through hex 9F.

Emulation Extend

- **Disable**. Does not select the extension command.
- **Enable**. Selects the extension command (ESC 4/ESC 5 to select/cancel Italic Printing and ESC SP to select Intercharacter Spacing).

3 *LinePrinter Plus KS Emulation*

KS Emulation

“Emulation” refers to the ability of a printer to execute the commands of other printer control languages. In KS emulation mode, your printer prints files coded for Epson LQ series printers, particularly the KS.

Exceptions and Differences

Because of mechanical differences between your printer (a line matrix printer) and moving printhead serial matrix printers, some features are approximated or not supported.

Default Values and States

Your printer stores a set of typical operating states and conditions in the flash memory. The first time you power up the printer, the factory settings in Table 4 are automatically invoked.

Table 4 Factory Settings

Characteristic	Default Setting
Select LPI	6.0
DBCS CPI	6.0
Host Command	Enable
Typeface	LQ
Styling Type	Myungjo
High Density	Disable
Bold Print	Disable
Italic Print	Disable
Slashed Zero	Disable
DBCS ASCII Style	Normal
Text Position	Bottom of Line
Encoding	Address Table
Graphics Spd Up	Normal
Left Margin	0 columns
Right Margin	0 columns
Bottom Margin	0 lines
Perforation Skip	Disable

Table 4 Factory Settings

Characteristic	Default Setting
Form Length	11.0 inches 279.4 millimeters 66 lines
Form Width	13.6 inches 345.4 millimeters 163 characters
Reset Cmd CFG Ld	Disable
Illegal Code Pt.	Normal
Define CR Code	CR = CR
Auto LF	Enable
Define LF Code	LF = CR + LF
Printer Select	Disable
Alt Set 80-9F	Control Code
Emulation Extend	Disable

Escape Sequences

Some KS control codes consisting of more than one character are called escape sequences because the first character in the sequence is the ASCII ESCape character. ESC alerts the printer that a special function command—not printable characters—follows.

The format for an escape sequence is:

ESC (parameter 1)(parameter 2)...(parameter *n*)

For example, to select emphasized (offset) print, send the ESC character immediately followed by the E character (do not add a space character):

ASCII: ESC E **Hex**: 1B 45**Dec**: 27 69

Super-Set Commands

The unique control code sequence for both SSCC and ASSC commands are defined in the table below:

Control Code	ASCII Value	Hex Value	Dec Value
SSCC	ESC | } ;	1B 7C 7D 3B	27 124 125 59
ASSC	ESC | } ; q	1B 7C 7D 3B 71	27 124 125 59 113

Set And Reset Codes

Set and reset are other ways of saying turn on and turn off; select and deselect; or enable and disable.

Some printer features are set and reset with an escape sequence and the numbers 1 or 0. In those cases, you can represent 1 and 0 as hexadecimal codes 01 and 00, or as the ASCII codes for the numerals 1 and 0 (hexadecimal 31 and 30).

Configuring the KS Emulation with Control Codes

The remainder of this chapter describes the KS printer control language codes that may be sent from a host computer attached to the printer in order to invoke and configure numerous KS emulation functions.

Format for Control Code Descriptions

The following information is listed for each code (where applicable and possible) in this chapter:

ASCII Mnemonic. The ASCII name for the control code.

Hex Code. The hexadecimal equivalent of the code. (For octal equivalents, refer to Appendix A.)

Dec Code. The decimal equivalent of the code.

Purpose. The function(s) of the control code.

Comment. A description of exceptions or limitations to normal use.

Example. A sample is provided for some control codes to illustrate how the code is used.

Control Code Index

The following index lists the control codes by function, ASCII mnemonic, and page number. Some control code functions can also be selected at the control panel.

Absolute Horizontal Print Position

ASCII Code ESC t *n1 n2 n3*

Hex Code 1B 74 *n1 n2 n3*

Dec Code 27 116 *n1 n2 n3*

Purpose

Moves the simulated print head to an Absolute Horizontal Print position using the following formula:

horizontal position = (*n1* x 100) + (*n2* x 10) + *n3*

Where:

n1 = 0 (hex 30) through 1 (hex 31)

n2 = 0 (hex 30) through 9 (hex 39)

n3 = 0 (hex 30) through 9 (hex 39)

horizontal position = 1 through 136

Comment

The unit setting for this command is based on the present size of the ASCII character. Only a condensed print (SI) or CPI (ESC q) command will change the character size.

When moving to an Absolute Horizontal Print position using ESC t, then underline, shadow, and reverse do not print. When the One and a Half Times mode (ESC s) is on, the Absolute Horizontal Print position will not activate until One and a Half Times mode is turned off.

If the distance goes beyond the right margin, the sequence is ignored.

Auto Wrap Mode

ASCII Code ESC d *n*

Hex Code 1B 64 *n*

Dec Code 27 100 *n*

Purpose

When data is printed beyond the right margin in Auto Wrap mode, an LF is inserted automatically. The next character is then printed on the next line from the left margin, and all one line commands selected with SO and ESC y are reset.

Where:
n = SOH (hex 01) or 1 (hex 31) turns on Auto Wrap mode

n = NUL (hex 00) or 0 (hex 30) turns off Auto Wrap mode

Comment

Auto Wrap mode is on by default. When Auto Wrap mode is off, any data which occurs beyond the right margin is cut off.

Backspace

ASCII BS

Hex 08

Dec 8

Purpose

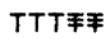
Moves the print position to the left a distance equal to an ASCII character in the current pitch, plus any additional intercharacter space.

Discussion

The code is ignored if the logical print head is positioned at the first character column.

Example

If you were to print five “T” characters followed by two BS commands and two “=” characters, the output would look like the sample below:



Barcode Printing

ASCII Code SSCC c *t; d data d* [; N *n* ; *xxxx* ; *yyyy*] [; X *mmmm*] [; P *p*] [; C] [; H *hh*] [; D] [; F *q data q*]

Hex Code SSCC 63 *t; d data d* [; 4E *n* ; *xxxx* ; *yyyy*] [; 58 *mmmm*] [; 50 *p*] [; 43] [; 48 *hh*] [; 44] [; 46 *q data q*]

Dec Code SSCC 99 *t; d data d* [; 78 *n* ; *xxxx* ; *yyyy*] [; 88 *mmmm*] [; 80 *p*] [; 67] [; 72 *hh*] [; 68] [; 70 *q data q*]

Where:

t = type of Barcode

t (ASCII)	t (hex)	Selects Barcode
B	42	Codabar
C	43	Code 39
9	39	Code 93
D	44	Code 128
8	38	EAN-8
1	31	EAN-13
F	46	FIM
G	47	German I-2/5
I	49	Interleaved 2/5
M	4D	MSI
4	34	PDF 417
O	4F	PostBar
P	50	POSTNET
R	52	Royal Mail
T	54	Telepen
V	56	UCC/EAN-128
A	41	UPC-A
E	45	UPC-E
S	53	UPC Shipping
U	55	UPS 11

Where:

d = barcode delimiter, which can be any character not used in the barcode data field.

data = variable length printable data field (PDF); character set is Alphanumeric

The following parameters are optional:

Where:

N = activates the offset

n = the x and y coordinate unit system

n (ASCII)	Selects Value
0	Use current cpi and lpi values
1	Use 1/4 inch value
2	Use 1/2 centimeter value : 1/(2.54x2)
3	Use 1 mm value : 1/(25.4)
4	Use target barcode dot (refer to table immediately below)

When:

n = 4

Front Panel Typeface	X Offset Unit (Inch)	Y Offset Unit (Inch)
LQ	1/180	1/180
Near LQ	1/120	1/120
Normal	1/180	1/144
Hi-Speed	1/180	1/120
Super Hi-Speed	1/180	1/90
Ultra Hi-Speed	1/180	1/90

Where:

xxxx = 4-digit upper left corner x (horizontal axis)

yyyy = 4-digit upper left corner y (vertical axis)

X = activates magnification

mmmm = bar code magnification

The possible magnification is as follows:

Barcode Type	Magnification
Code 39	X4 X3 X2 X1 X1.5 X1A X1B *X1C *X1D *X1E X4 X3 X2 X2A X1 X1A X1B
Interleaved 2/5	X4 X3 X2 X2A X1 X1A X1B
German I-2/5	X4 X3 X2 X2A X1 X1A X1B
UPC Shipping	X4 X3 X2 X1 X1.5 X1A X1B *X1C *X1D *X1E
Telepen	X4 X3 X2 X1 X4 X3 X2 X1 X1.5
MSI	X4 X3 X2 X1 X1.5
Code 128	X4 X3 X2 X1 X1.5

Barcode Type	Magnification
UCC/EAN-128	X4 X3 X2 X1 X1.5
Code 93	X2 X1
UPS 11	X2 X1
UPC-A	X2 X1
UPC-E	X2 X1
EAN 8	X4 X3 X2 X1
EAN 13	X1
Codabar	X1 X1A
POSTNET	X1 X1A
Royal Mail	X1
Postbar	X3 X2 X1
FIM	
PDF 417	
* The X1C, X1D, and X1E values can only be printed for a 180 dpi horizontal barcode. If these values are sent for a 120 dpi horizontal barcode, it will print as value X1.	

Where:

P = activates printable data field variable

p = location of PDF (“A” {above}, “B” {below, default}, “N” {none})
(Note: FIM, Postbar, and PDF417 do not support this parameter.)

C = Calculate and plot check digit (if the check digit is optional)

H = activates the height variable

hh = 2-digit barcode height in 1/10”

D = Dark barcode
(Note: This parameter does not take effect under any DBCS typefaces.)

[;F *q data q*] = secondary data field (optional). The secondary data field is only used to specify the barcode data when the primary data field is empty (two delimiters without any data). When the primary data field is not empty, the secondary data field is ignored.

NOTE: This is not the KS Emulation command. This is an additional command for the H-series printer only.

Bell

ASCII BEL

Hex 07

Dec 7

Purpose

Sounds the printer's bell for 1/10 second.

Bit Image Select

ASCII ESC * *m n1 n2 d1 ... dk*

Hex 1B 2A *m n1 n2 d1 ... dk*

Dec 27 42 *m n1 n2 d1 ... dk*

Purpose

Prints dot-graphics in 8- or 24-dot columns, depending on the defined parameters.

Where:

m = the dot density (see Table 5).

n1 n2 = total number of columns of graphics data to follow:

number of dot columns = (*n2* x 256) + *n1*

n1 ranges from 0 through 255; *n2* ranges from 0 through 31. *d1 ... dk* = bytes of graphics data; *k* is determined by multiplying the total number of columns times the number of bytes required for each column.

Table 5 Dot Density

m	Horizontal Density (dpi)	Vertical Density (dpi)	Dots per Column	Bytes per Column
0	60	60	8	1
1	120	60	8	1
2	120	60	8	1
3	240	60	8	1
4	80	60	8	1
6	90	60	8	1
32	60	180	24	3
33	120	180	24	3
38	90	180	24	3
39	180	180	24	3
40	360	180	24	3

Bold Print

ASCII Code	ESC E	ESC F
Hex Code	1B 45	1B 46
Dec Code	27 69	27 70

Purpose

ESC E sets the weight attribute of the font to **bold**.
ESC F sets the weight attribute of the font to normal (cancels the bold weight previously set by ESC E).

Comments

The ESC E command increases the weight of printed lines and characters, resulting in bolder printing.

Both the ESC E and ESC F commands override the Bold Print setting on the control panel (see page 20), and both commands work under ASCII and Hangul modes.

Cancel Italic Font

ASCII Code	ESC 5
Hex Code	1B 35
Dec Code	27 53

Purpose

Sets the style attribute of the font to normal (default). (Cancels the italic style previously selected with the ESC 4 command.)

Comment

This command changes the Italic Print front panel setting.

This command only takes effect when Emulation Extend (a front panel option) is set to Enable.

NOTE: This is not the KS Emulation command. This is an additional command for the H-series printer only.

Cancel Line

ASCII Code	CAN
Hex Code	18
Dec Code	24

Purpose

Clears all printable characters and bit-image graphics on the current line and moves the print position to the left margin.

Carriage Return

ASCII Code	CR
Hex Code	0D
Dec Code	13

Purpose

Returns the simulated print head to the left margin.

Comment

The CR code may or may not cause printing or paper motion, depending on the configuration as set from the control panel. If CR=CR is set, the characters following the CR are printed over the previous characters on the line. If CR=CR+LF is set, the paper is moved one line at the current line spacing. This automatic LF will also cancel all single line print attributes.

Condensed Print (Set/Reset)

ASCII Code	SI	DC2
Hex Code	0F	12
Dec Code	15	18

Purpose

Condenses print pitch to Hangul 10 CPI/English 20 CPI. DC2 cancels this command.

Comment

Control code SI affects all subsequent characters. After receiving code SI, all characters are printed condensed until the printer is reset by DC2, a printer reset, or a new print mode control code.

One and a Half Times mode and Superscript/Subscript mode are ignored in Condensed mode. Conversely, condensed mode commands are ignored if One and a Half Times or Superscript/Subscript mode is turned on.

Example

The program below shows condensed character printing and reset.

```
Control code
SI selects
condensed character printing.
Control code DC2
resets condensed character printing.
```

Double Height Upper/Lower Part of Character

ASCII Code	ESC i *n*
Hex Code	1B 69 *n*
Dec Code	27 105 *n*

Purpose

Turns the double height upper/lower character feature on or off.

Where:
n = SOH (hex 01) or 1 (hex 31) prints the upper part of character with double height

n = STX (hex 02) or 2 (hex 32) prints the lower part of character with double height

n = NUL (hex 00) or 0 (hex 30) reset; print as normal character

Comment

The ESC i *n* command vertically enlarges the upper or lower part of a character. When printing the upper part in this mode, the minimal line spacing is 24/180 inches. This prevents overlapping after an LF. When printing the lower part and executing an LF command, the paper moves by:

(set value) x 2 - 24/180 inches. If the calculated value is less than or equal to 0, the adjustment of line spacing is ignored. To set line spacing, the line spacing command must precede the ESC i *n*

command.

The underline cannot be printed with the upper part of a character. This command is not cleared by LF or CR commands.

See Figure 5 for an illustration of this command.

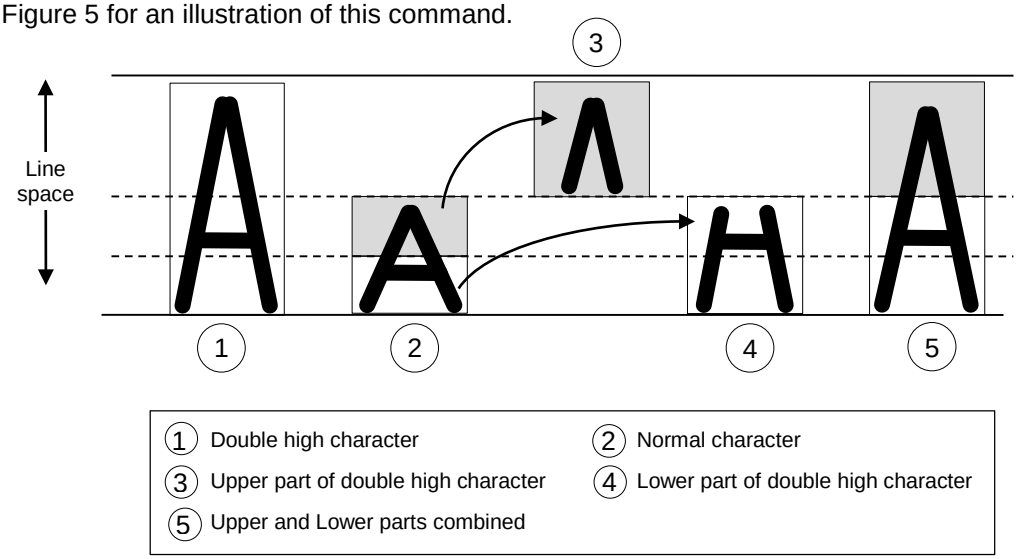


Figure 5 Double Height Upper/Lower part Of Character Example

Double High Print

ASCII Code ESC y *n*

Hex Code 1B 79 *n*

Dec Code 27 121 *n*

Purpose

Turns double high print on and off.

Where:

n = SOH (hex 01) or 1 (hex 31) turns double high print on

n = NUL (hex 00) or 0 (hex 30) turns double high print off

Comment

When ESC y is received, all characters are printed twice as high until reset. This command is cancelled when the printer receives the following commands: LF, FF, VT, CR, or ESC J.

This command is ignored when One and a Half Times mode is turned on, and the One and a Half Times command cancels this feature.

Double Strike

ASCII Code ESC G ESC H

Hex Code 1B 47 1B 48

Dec Code 27 71 27 72

Purpose

ESC G turns on double strike printing.

ESC H turns off double strike printing.

Comment

ESC G makes text bolder by printing each dot twice, the second dot offset to the right of the first by a distance equal to 1/2 the width of a dot.

Example

The following program illustrates double strike character printing.

```
Control code ESC G
selects bold character printing,
for example: AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPp.
Control code ESC H
cancels bold character printing.
```

Double Wide Print

ASCII Code ESC W *n*

Hex Code 1B 57 *n*

Dec Code 27 87 *n*

Purpose

Turns double wide print on and off.

Where:

n = SOH (hex 01) or 1 (hex 31) turns double wide print on

n = NUL (hex 00) or 0 (hex 30) turns double wide print off

Comment

When ESC W is received, all characters are printed twice as wide until reset.

This command is ignored when One and a Half Times mode is turned on, and the One and a Half Times command cancels this feature.

Example

The following program illustrates double wide character printing.

```
Control code
ESC W 1 selects
expanded character printing.
Control code
ESC W 0 resets
expanded character printing.
```

Double Wide Print (One Line)

ASCII Code	SO	DC4
Hex Code	0E	14
Dec Code	14	20

Purpose

Selects double wide print for one line only. DC4 cancels this command.

Comment

This control code is a line-by-line print attribute; when SO is received, the characters on the current line print twice as wide and then reset automatically.

This control code is cancelled by one of the following codes: LF, FF, VT, DC4, ESC W 0, CR, or ESC J. If Auto Wrap is active, once the data reaches the end of the line double wide print is cancelled.

SO does not work in One and a Half Times mode, and it will recover when One and a Half Times mode is cancelled. In Compressed mode, the width of the printed character will print double the size of the compressed character.

Example

The following program illustrates double wide print for one line only.

```
Control code
SO selects
expanded character printing
for one line only.
```

Font Expansion

ASCII Code	ASSC	0	e	n1	n2
Hex Code	ASSC	30	65	n1	n2
Dec Code	ASSC	48	101	n1	n2

Purpose

Expand the DBCS character up to the size of 72.

For this command to work, n1 must be the same value as n2 (i.e. n1 = n2). When n1 and n2 = 25 to 72, this set font expansion mode is ON. The value of n1 and n2 will determine the bitmap size. For example, if the size of n1 is 50, then the size of the bitmap will be set to 50x50. For n1 and n2 = 24, the font expansion mode will reset to OFF and the bitmap size reverts to the default, 24x24.

Inter-line spacing and inter-character spacing calculations are based on standard setting as if bitmap is 24x24. This command will only increase the size of the bitmap and not affect inter-character spacing or inter-line spacing. For example, if inter-line spacing is 6 dot rows, when the bitmap is expanded from 24x24 to 72x72, the inter-line spacing still remains as 6 dot rows. This is the same for inter-character spacing.

Other commands, such as double height, double width, 2x2 times, left/right margin etc., will not function when font expansion mode is set on. For different typefaces, the characters will expand based on approximate typeface resolution. All commands affecting LPI and CPI will still take effect and is set based on the bitmap being 24x24.

Where:

n1 = 24 ~ 72

n2 = 24 ~ 72

This control code does not function while in non-DBCS mode.

Form Feed

ASCII Code FF

Hex Code 0C

Dec Code 12

Purpose

Prints the data in the buffer, if any, then moves the paper to the top of the next form.

Comment

The simulated print head moves to the left margin. This code cancels one-line double-width printing selected with the SO or ESC SO commands.

Form Length By Lines

ASCII Code ESC C *n*

Hex Code 1B 43 *n*

Dec Code 27 67 *n*

Purpose

Sets the form length by lines.

Where:

n = 1 through 127 (hex 01 through hex 7F) to specify the number of lines per form at the current line spacing.

Comment

The current line becomes the first line of the form. Setting the form length cancels the bottom margin setting.

Changing the line spacing does not affect the current page length setting, but does change the total number of lines. If the line spacing is changed, using only LF commands may not reach the exact position of the top-of-form.

This command overrides the front panel setting for Function Of Lines (see page 21).

Graphic Printing

ASCII Code	ASSC	0	*	m	nL	nH	d1…dk
Hex Code	ASSC	30	2A	m	nL	nH	d1…dk
Dec Code	ASSC	48	42	m	nN	nH	d1…dk

Purpose

Prints dot-graphics in 16 or 24-dot columns, depending on the following parameters:

Where:

m specifies the dot density

nL, nH specifies the total number of columns or graphics data that follow (number of dot columns) = ((nHx256) + nL)

d1…dk specifies bytes of graphics data; k is determined by multiplying the total number of columns times the number of bytes required for each column.

Parameter m is ASSC*	Horizontal Density (dpi)	Vertical Density (dpi)	Dots Per Column	Bytes Per Column
0	180	180	24	3
1	90	180	24	3
2	120	120	16	2
3	90	144	24	3
4	90	120	16	2
5	90	90	16	2

Graphics Select (60 dpi)

ASCII Code ESC K *n1 n2 d1 ... dk*

Hex Code 1B 4B *n1 n2 d1 ... dk*

Dec Code 27 75 *n1 n2 d1 ... dk*

Purpose

Prints bit-image graphics in 8-dot columns, at a density of 60 horizontal by 60 vertical dpi, depending on the defined parameters.

Where:
n1 n2 = total number of columns of graphics data to follow:
number of columns = (*n2* x 256) + *n1*
n1 ranges from 0 through 255; *n2* ranges from 0 through 3.
d1 ... dk = bytes of graphics data; range from 0 through 255.

Comment

This command is identical to the ESC * 0 command (see page 35).

Graphics Select (120 dpi)

ASCII Code ESC L *n1 n2 d1 ... dk*

Hex Code 1B 4C *n1 n2 d1 ... dk*

Dec Code 27 76 *n1 n2 d1 ... dk*

Purpose

Prints bit-image graphics in 8-dot columns, at a density of 120 horizontal by 60 vertical dpi, depending on the defined parameters.

Where:
n1 n2 = total number of columns of graphics data to follow:
number of columns = (*n2* x 256) + *n1*
n1 ranges from 0 through 255; *n2* ranges from 0 through 6.
d1 ... dk = bytes of graphics data; range from 0 through 255.

Comment

This command is identical to the ESC * 1 command (see page 35).

Graphics Select (180 dpi)

ASCII Code ESC n *n1 n2 d1 ... dk*

Hex Code 1B 6E *n1 n2 d1 ... dk*

Dec Code 27 110 *n1 n2 d1 ... dk*

Purpose

Prints bit-image graphics in 24-dot columns, at a density of 180 horizontal by 180 vertical dpi, depending on the defined parameters.

Where:

n1 n2 = total number of columns of graphics data to follow:

number of columns = ((*n2* x 256) + *n1*) x 3

n1 ranges from 0 through 255; *n2* ranges from 0 through 9.

d1 ... dk = bytes of graphics data; range from 0 through 255.

Comment

This command is identical to the ESC * 39 command (see page 35).

Hangul/English CPI Select

ASCII Code ESC q *n*

Hex Code 1B 71 *n*

Dec Code 27 113 *n*

Purpose

Sets character pitch to one of the values listed in Table 6.

Table 6 Hangul/English CPI Select

n (Hex)	CPI	Cell Size
0 or 30	Hangul 5 CPI English 10 CPI	Hangul 24 x 24 English 12 x 24
1 or 31	Hangul 6 CPI English 12 CPI (the default)	Hangul 24 x 24 English 12 x 24
2 or 32	Hangul 10 CPI English 10 CPI	Hangul 12 x 24 English 12 x 24
3 or 33	Hangul 6.7 CPI English 13.3 CPI	Hangul 24 x 24 English 12 x 24
4 or 34	Hangul 7.5 CPI English 15 CPI	Hangul 24 x 24 English 12 x 24
5 or 35	Hangul 8.5 CPI English 17 CPI	Hangul 12 x 24 English 6 x 24
6 or 36	Hangul 9 CPI English 18 CPI	Hangul 12 x 24 English 6 x 24

Comment

This function has no effect on One and a Half Times mode and condensed mode.

Hangul/English Mode Select

ASCII Code ESC h *n*

Hex Code 1B 68 *n*

Dec Code 27 104 *n*

Purpose

Switches between Hangul/English mode and English-only mode.

Where:

n = SOH (hex 01) or 1 (hex 31) selects Hangul/English mode

n = NUL (hex 00) or 0 (hex 30) selects English-only mode

Comment

In Hangul/English mode, only ASCII characters in the range below hex 80 are addressed. Anything above this range are Hangul characters following the Korean standard code table (KSC 5601). See Appendix B.

In English-only mode, the characters in the range above hex 80 are extended characters, and can be recognized as either control codes or printable characters with the ESC 7 and ESC 6 commands, respectively (see page 50).

Hangul Myunjo/Gothic Character Select

ASCII Code ESC m *n*

Hex Code 1B 6D *n*

Dec Code 27 109 *n*

Purpose

Selects the typeface of all characters following the command.

Where:
n = SOH (hex 01) or 1 (hex 31) selects Gothic style

n = NUL (hex 00) or 0 (hex 30) selects Myunjo style

Comment

The Hangul characters in the Hangul code table can be selected as Myunjo or Gothic. The remainder of the code table (e.g. special and Chinese characters) remains the same. The default is Myunjo typeface.

Home Print Head

ASCII Code ESC <

Hex Code 1B 3C

Dec Code 27 60

Purpose

The print head moves to the extreme left position, so the next line prints left to right.

Horizontal Tab Execute

ASCII Code HT

Hex Code 09

Dec Code 09

Purpose

Moves the simulated print head to the next horizontal tab stop set by the ESC D command.

Comment

The unit setting for this command is based on the present size of the ASCII character. Only a condensed print (SI) or CPI (ESC q) command will change the character size.

If double wide or Superscript/Subscript mode is active, the Absolute Horizontal Print position is kept the same.

The printer ignores this command if no tab is set to the right of the current position or if the next tab is to the right of the right margin. Character scoring (underline, overscore, and strikethrough) is not printed between the current print position and the next tab when this command is sent.

Horizontal Tab Set/Release

ASCII Code ESC D *n1 ... nk* NUL

Hex Code 1B 44 *n1 ... nk* 00

Dec Code 27 68 *n1 ... nk* 0

Purpose

Sets up to 28 horizontal tab positions in the current character pitch, measured from the left margin position.

Where:

n = 1 through 255 (hex 01 through hex FF)

k = 1 through 28 (hex 01 through hex 1C)

n1 through *n28* specify the character column of the tab positions. NUL is the sequence terminator. ESC D NUL clears all tabs.

Comment

The values of *n* must be listed in ascending order or they are ignored. Tabs greater than 28 are ignored. The printer does not move the print position to any tabs beyond the right-margin position. However, all tab settings are stored in the printer's memory; if you move the right margin, you can access previously ignored tabs.

After tabs are set, HT moves the simulated print head to the next tab stop. Sending ESC @ initializes the printer and resets the tabs to every eighth character column (which is the default).

Changing the character pitch does not affect current tab settings. The tab settings move to match any movement in the left margin.

Example

The following example illustrates how to set horizontal tabs.

```
Control code
ESC D CHR$(4);CHR$(10);CHR$(0)
sets tab stops at columns 4 and 10.
Control code HT
accesses the tab stops as follows:
    column 4
          column 10
```

Initialize Printer

ASCII Code ESC @

Hex Code 1B 40

Dec Code 27 64

Purpose

Resets all print-related parameters to the power-up configuration values.

Comment

Restores the power-up configuration. The print buffer is cleared of printable data on the line preceding the command. Current position is set as top-of-form.

All settings, such as font, international language selection, etc., are reset to the power-up default values. Character-by- character and line-by-line attributes are canceled. All channels of the vertical format unit are cleared. This command resets the horizontal tabs to every eighth character column. Interface parameters and printer protocol selection are not affected.

NOTE: This is not the KS Emulation command. This is an additional command for the H-series printer only.

Line Feed

ASCII Code LF

Hex Code 0A

Dec Code 10

Purpose

Prints the data in the buffer (if any) and advances the vertical character position a distance of one line at the current line spacing.

Comment

If configured for LF equals newline (LF=CR+LF) from the printer's front panel, the simulated print head is moved to the left margin. Otherwise, it is not moved from its current position.

This code cancels single line print attributes selected with the SO, ESC w, or ESC y commands.

If the LF command moves the print position below the bottom margin on continuous paper, the paper advances to the Top- Of-Form position on the next page.

Line Feed *n*/180 Inch

ASCII Code ESC J *n*

Hex Code 1B 4A *n*

Dec Code 27 74 *n*

Purpose

Immediately advances the paper *n*/180 inch.

Where:

n = 0 through 255 (hex 00 through hex FF)

Comment

n = 0 is ignored. This command produces an immediate line feed but does not affect line spacing or produce a carriage return. Any one-line-only print attributes in effect are canceled.

Small values of *n* can result in overlapping lines. Overlapping lines can also occur if print attributes such as double high, superscript, or subscript characters are used on the same line.

If One and a Half Times mode (ESC s) is on, any value of *n* specified between 1 and 24 advances the paper 24/180 inch. Any value of *n* specified between 25 and 255 advances the paper *n*/180 inch.

Example

The following example illustrates *n*/180-inch line spacing.

```
Control code ESC J 132



performs a 132/180 inch
line feed function for one line only.
```

Line Spacing 1/6 Inch (6 lpi)

ASCII Code ESC 2

Hex Code 1B 32

Dec Code 27 50

Purpose

If this command is following an ESC A *n* command, line spacing is set at *n*/60 inch. Otherwise, line spacing is set at 1/6 inch (6 lpi) for subsequent line feeds.

Comment

The 2 is ASCII character 2, not hex 2. This control code overrides line spacing set at the control panel.

Example

The following example illustrates 1/6-inch line spacing.

```
Control code ESC 2 sets
line spacing at
6 lpi for all subsequent lines
until reset or another spacing is selected.
```

Line Spacing 1/8 Inch (8 lpi)

ASCII Code ESC 0

Hex Code 1B 30

Dec Code 27 48

Purpose

Sets the line spacing to 1/8 inch (8 lpi) for subsequent line feeds.

Comment

The 0 is ASCII character 0, not hex 0. When ESC 0 is received, all lines are printed at 8 lpi until a new line spacing is selected or the printer is reset. This control code overrides line spacing set at the control panel.

Example

The following example illustrates 1/8-inch line spacing.

```
Control code ESC 0 sets
line spacing at
1/8 (8 lpi) inch for all subsequent lines
until reset or another spacing is selected.
```

Line Spacing 1/10 Inch (10.3 lpi)

ASCII Code ESC 1

Hex Code 1B 31

Dec Code 27 49

Purpose

Sets the line spacing to 1/10 inch (10.3 lpi) for subsequent line feeds. This control code overrides line spacing set at the control panel.

Comment

The 1 is ASCII character 1, not hex 1. When ESC 1 is received, all lines are printed at 10.3 lpi until a new line spacing is selected or the printer is reset.

Line Spacing *n*/60 Inch

ASCII Code ESC A *n*

Hex Code 1B 41 *n*

Dec Code 27 65 *n*

Purpose

Sets a line spacing of *n*/60 inch for subsequent line feeds. This command takes effect only when followed by an ESC 2 command.

Where:

n = 1 through 85 (hex 01 through hex 55) (all other values are ignored)

Comment

When this control sequence is received, all subsequent line feeds are *n*/60-inch until a new line spacing is selected or the printer is reset. This setting overrides line spacing set at the control panel.

Small values of *n* can result in overlapping lines. Overlapping lines can also occur if print attributes such as Elongated (Double High), Superscript, or Subscript characters are used on the same line. If lines overlap, printing speed is reduced.

Example

The following example illustrates *n*/60-inch line spacing.

```
Control code ESC A 20 sets
line spacing at 20/60 inch

increments for all subsequent lines

until reset or another spacing is selected.
```

Line Spacing *n*/120 Inch

ASCII Code ESC u *n*

Hex Code 1B 75 *n*

Dec Code 27 117 *n*

Purpose

Specifies the line spacing at *n*/120-inch increments.

Where:

n = 1 through 255 (hex 01 through hex FF)

Comment

When this control sequence is received, all subsequent line feeds are *n*/120-inch until a new line spacing is selected or the printer is reset. This setting overrides line spacing set at the control panel.

Small values of *n* can result in overlapping lines. Overlapping lines can also occur if print attributes such as Elongated (Double High), Superscript, or Subscript characters are used on the same line. If lines overlap, printing speed is reduced.

Line Spacing *n*/180 Inch

ASCII Code ESC 3 *n*

Hex Code 1B 33 *n*

Dec Code 27 51 *n*

Purpose

Specifies the line spacing at *n*/180-inch increments.

Where:

n = 1 through 255 (hex 01 through hex FF)

Comment

The 3 is an ASCII character 3, not hex 3. All line feeds following receipt of this code are at *n*/180 inch line spacing until a new line spacing is selected or the printer is reset. Line spacing set by this control code overrides line spacing setting set at the control panel.

If the vertical distance to move is other than a multiple of *n*/180 inch, the remainder is added to the next paper motion command.

Use caution when combining this control code with other print attributes such as Elongated (Double High), Superscript, or Subscript, because overlapping lines can occur. Print speed is reduced if lines overlap.

Example

The following example illustrates *n*/180-inch line spacing.

```
Control code ESC 3 50 sets
line spacing at 50/180 inch

increments for all subsequent lines

until reset or another spacing is selected.
```

Line Spacing 1/*n* Inch

ASCII Code ESC c *n*

Hex Code 1B 63 *n*

Dec Code 27 99 *n*

Purpose

Specifies the line spacing at 1/*n*-inch increments.

Where:

n = 3 through 6, 8 or 60 (hex 03 through 06, 08, 3C)

Comment

When this control sequence is received, all subsequent line feeds are 1/*n*-inch until a new line spacing is selected or the printer is reset. This setting overrides line spacing set at the control panel.

Make Hex 80-9F Printable

ASCII Code ESC 6

Hex Code 1B 36

Dec Code 27 54

Purpose

Makes codes hex 80-9F printable characters.

Comment

The 6 is an ASCII character 6, not hex 6. This command affects the front panel setting for the Alt. Set 80-9F menu option.

This command takes effect in English-only mode (see page 44).

Make Hex 80-9F Control Codes

ASCII Code ESC 7

Hex Code 1B 37

Dec Code 27 55

Purpose

Makes codes hex 80-9F control codes.

Comment

This command affects the front panel setting for the Alt. Set 80- 9F menu option.

This command takes effect in English-only mode (see page 44).

One And A Half Times Mode

ASCII Code ESC s *n*

Hex Code 1B 73 *n*

Dec Code 27 115 *n*

Purpose

All characters are printed at one and a half times their normal size, as measured from the current baseline and based on the default CPI.

Where:

n = SOH (hex 01) or 1 (hex 31) turns One and a Half Times mode on

n = NUL (hex 00) or 0 (hex 30) turns One and a Half Times mode off

Comment

One and a half times characters can have underline, emphasis, shadow background, and reverse printing attributes.

Condensed and Superscript/Subscript commands are ignored if One and a Half Times mode is on. Conversely, One and a Half Times mode commands are ignored if Condensed mode or Superscript/Subscript mode is on.

Double width and double height commands do not work when One and a Half Times mode is on, but the commands are recovered when the One and a Half Times mode is cleared.

HT and ESC t commands are ignored in One and a Half Times mode.

This command is ignored in bit image mode.

The line with the One and a Half Times character has double the line spacing as a normal line.

Print Quality

ASCII Code ESC x *n*

Hex Code 1B 78 *n*

Dec Code 27 120 *n*

Purpose

Selects print quality.

Where:

n = hex 00 or hex 30 selects LQ print quality

n = hex 01 or hex 31 selects Hi-Speed print quality

n = hex 02 or hex 32 selects Near LQ print quality

n = hex 03 or hex 33 selects Super Hi-Speed print quality

n = hex 04 or hex 34 selects Normal print quality

n = hex 05 or hex 35 selects Ultra Hi-Speed print quality

Comment

This command overrides control panel print quality selections.

Printer Deselect

ASCII Code DC3

Hex Code 13

Dec Code 19

Purpose

Places printer in the deselected state.

Comment

The configuration parameter Printer Select must be set to Enable.

When the printer receives this command, it ignores data until a DC1 (Printer Select) command is received.

NOTE: This is not the KS Emulation command. This is an additional command for the H-series printer only.

Printer Select

ASCII Code DC1

Hex Code 11

Dec Code 17

Purpose

Places printer in the selected state.

Comment

The configuration parameter Printer Select must be set to Enable.

This control code allows the printer to receive and print data from the host if it was deselected by DC3. If the printer was not deselected by DC3, this code is ignored.

NOTE: This is not the KS Emulation command. This is an additional command for the H-series printer only.

Reverse Mode

ASCII Code ESC r *n*

Hex Code 1B 72 *n*

Dec Code 27 114 *n*

Purpose

Turns Reverse Printing on or off.

Where:

n = hex 01 or hex 31 turns Reverse Printing on

n = hex 00 or hex 30 turns Reverse Printing off

Select Bit Image

ASCII Code	SSCC	*	*m*	*nL*	*nH*	*d1 ... dk*
Hex Code	SSCC	2A	*m*	*nL*	*nH*	*d1 ... dk*
Dec Code	SSCC	42	*m*	*nL*	*nH*	*d1 ... dk*

Purpose

Prints dot graphics in 12- or 16-dot columns, depending on the following parameters:

Where:

0 < = *nL* < = 255

0 < = *nH* < = 31

m = 30, 31, 32

nL nH specifies the total number of columns of graphics data that follow (number of dot columns) = (*nH* x 256 + *nL*)

d1 ... dk bytes of graphics data; k is determined by multiplying the total number of columns times the number of bytes required for each column.

Parameter *m* in ESC*	Horizontal Density (dpi)	Vertical Density (dpi)	Dots per Column	Bytes per Column
30	90	90	12	2
31	120	120	16	2
32	90	90	16	2

NOTE: This is not the KS Emulation command. This is an additional command for the H-series printer only.

Select Italic Font

ASCII Code ESC 4

Hex Code 1B 34

Dec Code 27 52

Purpose

Sets the style attribute of the font to italic. The default is normal (non-italic) style.

Comment

This command selects italic printing even if the italic character table is not selected. This command changes the Italic Print front panel setting.

This command only takes effect when Emulation Extend (a front panel option) is set to Enable.

NOTE: This is not the KS Emulation command. This is an additional command for the H-series printer only.

Set Intercharacter Spacing of DBCS Character

ASCII Code ESC SP *n*

Hex Code 1B 20 *n*

Dec Code 27 32 *n*

Purpose

Sets intercharacter spacing to the right of the DBCS character.

The left of the DBCS character spacing is set to 0.

Where:

0 < = *n* < = 127

Default *n* = 6

Comment

The dot size is 1/180 inch. The current CPI will be set according to full-width character.

The intercharacter spacing of SBCS character is half of *n*. This command affects DBCS CPI on the front panel.

This command only takes effect when Emulation Extend (a front panel option) is set to Enable.

NOTE: This is not the KS Emulation command. This is an additional command for the H-series printer only.

Set/Reset Vertical Writing

ASCII Code ESC j *n*

Hex Code 1B 6A *n*

Dec Code 27 106 *n*

Purpose

Sets/resets vertical writing.

Where:

n = 0: Resets vertical writing

n = 1: Sets vertical writing

Comment

Alphanumeric and table characters cannot be written vertically.

NOTE: This is not the KS Emulation command. This is an additional command for the H-series printer only.

Shadow Mode

ASCII Code ESC z *n*

Hex Code 1B 7A *n*

Dec Code 27 122 *n*

Purpose

Turns Shadow mode on or off. When Shadow mode is on, all characters are printed with background.

Where:

n = hex 01 or hex 31 turns shadow mode on

n = hex 00 or hex 30 turns shadow mode off

Superscript And Subscript Printing

ASCII Code ESC S *n* ESC T

Hex Code 1B 53 *n* 1B 54

Dec Code 27 83 *n* 27 84

Purpose

ESC S *n* selects superscript or subscript printing.

ESC T cancels superscript or subscript printing set by ESC S *n*.

Where:

n = NUL (hex 00) or 0 (hex 30) to enable superscript printing

n = SOH (hex 01) or 1 (hex 31) to enable subscript printing

Comment

Superscript prints quarter-sized characters with a baseline higher than the normal characters. Subscript prints quarter- sized characters with a baseline lower than the normal characters. ASCII characters become half height when the command is active. When the control code is received, all characters are superscript or subscript until reset by ESC T or printer reset.

The characters printed in Superscript or Subscript mode change to 15 CPI for both ASCII and DBCS characters.

You can print both superscript and subscript characters in the same character column by using the Backspace (BS) control code, but these characters will not print when double high printing is in effect.

This command does not affect graphics characters. The command is ignored in condensed mode and One and a Half Times mode. Conversely, Condensed and One and a Half Times mode commands are ignored when Superscript or Subscript is on.

The underline strikes through the descenders on subscript characters during Underline mode.

Table Character Masking

ASCII Code ESC w *n*

Hex Code 1B 77 *n*

Dec Code 27 119 *n*

Purpose

Masks the bitmap of table characters over *n* pins, and only prints from 1 to *n* pins.

Where:

n = 0 through 24 (hex 30 through hex 48)

Comment

This function is cancelled by the following commands: CR, LF, VT, FF, and ESC J, or if *n* = 0, 24, 48 or 72.

This command works for both Hangul and ASCII table characters. Hangul table characters range from A6A1 through A6E4. ASCII table characters include hex 01 through hex 06; hex 10; hex 15 through hex 17; and hex 19.

Table Characters, Extending

ASCII Code ESC v *n*

Hex Code 1B 76 *n*

Dec Code 27 118 *n*

Purpose

Enables or disables the extension of the table characters following the command.

Where:

n = SOH (hex 01) or 1 (hex 31) enables the extension of table characters

n = NUL (hex 00) or 0 (hex 30) disables the extension of table characters

Comment

This command works for both Hangul and ASCII table characters. Hangul table characters range from A6A1 through A6E4. ASCII table characters include hex 01 through hex 06; hex 10; hex 15 through hex 17; and hex 19.

When the table extension is enabled, the table characters in the previous line are extended to link to the next line. The maximum line spacing of the extension is 1 LPI. The table character is automatically extended horizontally.

Turn On/Off OCRB Selection

ASCII Code	ASSC0	z*n*
Hex Code	ASSC30	7A*n*
Dec Code	ASSC 48	122 *n*

Purpose

Prints ASCII characters with OCR B styling.

Where:

n = 0 or 48: Normal printing (default)

n = 1 or 49: OCR B printing

Comment

This command only functions in DBCS mode. This command affects the DBCS ASCII Style front panel setting.

NOTE: This is not the KS Emulation command. This is an additional command for the H-series printer only.

Underline

ASCII Code	ESC – *n*
Hex Code	1B 2D *n*
Dec Code	27 45 *n*

Purpose

Turns automatic underlining on and off.

Where:

n = NUL (hex 00) or 0 (hex 30) to turn off underlining

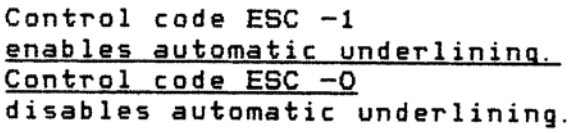
n = SOH (hex 01) or 1 (hex 31) to turn on underlining

Comment

Spaces are underlined, but graphics and grey scale characters are not. The underline is not printed across the distance that the horizontal print position is moved with the ESC t or HT commands.

Example

The following program illustrates underlining.



Unidirectional Mode

ASCII Code ESC U *n*

Hex Code 1B 55 *n*

Dec Code 27 85 *n*

Purpose

Turns unidirectional printing on and off.

Where:

n = NUL (hex 00) or 0 (hex 30) bidirectional printing

n = SOH (hex 01) or 1 (hex 31) unidirectional printing

Comment

Unidirectional printing provides better alignment of vertical lines. Bidirectional printing is faster but has lower print quality.

Vertical Tab

ASCII Code VT

Hex Code 0B

Dec Code 11

Purpose

Moves the vertical print position to the next vertical tab set below the current print position, and moves the horizontal print position to the left-margin position. The printer advances to the top-margin position of the following page if the next tab is below the bottom-margin position or if no tab is set below the current position.

The VT command functions the same as a CR command if all tabs have been cancelled by the ESC B NUL command.

Additionally, the VT command functions the same as an LF command if no tabs have been set since the printer was turned on or was reset with the ESC @ command.

This command cancels double-width printing set with the SO or ESC SO command.

Vertical Tab, Set/Clear

ASCII Code ESC B *n1 n2 n3...nk* NUL

Hex Code 1B 42 *n1 n2 n3...nk* 00

Dec Code 27 66 *n1 n2 n3...nk* 0

Purpose

Sets up to 16 vertical tab positions.

Where:

n = 1 through 255 (hex 01 through hex FF)

k = 1 through 16 (hex 01 through hex 10)

n1 through *nk* specify the line number for the vertical tab(s), up to a maximum of 16 tab positions. NUL must end the sequence.

To clear the tab settings, send ESC B NUL (1B 42 00).

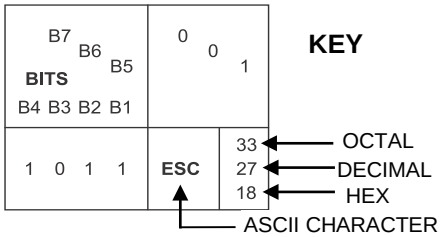
Comment

The values of *n* range from 1 through 255 and must be in ascending order. The distance of each tab stop from TOF is the current line spacing times the number of lines given in *n*. If the value of *n* exceeds the form length, commands to move to that tab position are ignored.

If values of *n* are not in ascending order, the sequence up to and including the out-of-sequence number is ignored, and the rest of the load is processed. Skip over perforation is ignored.

This command always sets channel 0. You can clear channel 0 by sending ESC B NUL.

A Standard ASCII Character Set



B7 B6 B5 / BITS B4 B3 B2 B1	ROW	0 0 0 COLUMN 0		0 0 1 1		0 1 0 2		0 1 1 3		1 0 0 4		1 0 1 5		1 1 0 6		1 1 1 7	
0 0 0 0	0	NUL	0 0 0	DLE	20 16 10	SP	40 32 20	0	60 48 30	@	100 64 40	P	120 80 50	`	140 96 60	p	160 112 70
0 0 0 1	1	SOH	1 1 1	DC1 (XON)	21 17 11	!	41 33 21	1	61 49 31	A	101 65 41	Q	121 81 51	a	141 97 61	q	161 113 71
0 0 1 0	2	STX	2 2 2	DC2	22 18 12	"	42 34 22	2	62 50 32	B	102 66 42	R	122 82 52	b	142 98 62	r	162 114 72
0 0 1 1	3	ETX	3 3 3	DC3 (XOFF)	23 19 13	#	43 35 23	3	63 51 33	C	103 67 43	S	123 83 53	c	143 99 63	s	163 115 73
0 1 0 0	4	EOT	4 4 4	DC4	24 20 14	$	44 36 24	4	64 52 34	D	104 68 44	T	124 84 54	d	144 100 64	t	164 116 74
0 1 0 1	5	ENQ	5 5 5	NAK	25 21 15	%	45 37 25	5	65 53 35	E	105 69 45	U	125 85 55	e	145 101 65	u	165 117 75
0 1 1 0	6	ACK	6 6 6	SYN	26 22 16	&	46 38 26	6	66 54 36	F	106 70 46	V	126 86 56	f	146 102 66	v	166 118 76
0 1 1 1	7	BEL	7 7 7	ETB	27 23 17	'	47 39 27	7	67 55 37	G	107 71 47	W	127 87 57	g	147 103 67	w	167 119 77
1 0 0 0	8	BS	10 8 8	CAN	30 24 18	(	50 40 28	8	70 56 38	H	110 72 48	X	130 88 58	h	150 104 68	x	170 120 78
1 0 0 1	9	HT	11 9 9	EM	31 25 19	)	51 41 29	9	71 57 39	I	111 73 49	Y	131 89 59	i	151 105 69	y	171 121 79
1 0 1 0	10	LF	12 10 0 A	SUB	32 26 1A	*	52 42 2A	:	72 58 3A	J	112 74 4A	Z	132 90 5A	j	152 106 6A	z	172 122 7A
1 0 1 1	11	VT	13 11 0 B	ESC	33 27 1B	+	53 43 2B	;	73 59 3B	K	113 75 4B	[	133 91 5B	k	153 107 6B	{	173 123 7B
1 1 0 0	12	FF	14 12 0 C	FS	34 28 1C	,	54 44 2C	<	74 60 3C	L	114 76 4C	\	134 92 5C	l	154 108 6C	|	174 124 7C
1 1 0 1	13	CR	15 13 0 D	GS	35 29 1D	-	55 45 2D	=	75 61 3D	M	115 77 4D	]	135 93 5D	m	155 109 6D	}	175 125 7D
1 1 1 0	14	SO	16 14 0 E	RS	36 30 1E	.	56 46 2E	>	76 62 3E	N	116 78 4E	^	136 94 5E	n	156 110 6E	~	176 126 7E
1 1 1 1	15	SI	17 15 0 F	US	37 31 1F	/	57 47 2F	?	77 63 3F	O	117 79 4F	_	137 95 5F	o	157 111 6F	DEL	177 127 7F

B *KS Character Sets*

Hangul/English Mode

The character sets on the following pages are supported by the ESC h *n* command. See Hangul/English Mode Select on page 44.

Hangul/English mode (ESC h 1)

ASCII character set (hex 00 through hex 7F)

Decimal Value	Hex Value	0	16	32	48	64	80	96	112
		0	1	2	3	4	5	6	7
0	0	NUL		BLANK (SPACE)	0	@	P	`	p
1	1			!	1	A	Q	a	q
2	2		DC2	"	2	B	R	b	r
3	3			#	3	C	S	c	s
4	4		DC4	$	4	D	T	d	t
5	5			%	5	E	U	e	u
6	6			&	6	F	V	f	v
7	7	BEL		'	7	G	W	g	w
8	8		CAN	(	8	H	X	h	x
9	9	HT		)	9	I	Y	i	y
10	A	LF		*	:	J	Z	j	z
11	B	VT	ESC	+	;	K	[	k	{
12	C	FF		,	<	L	₩	l	|
13	D	CR		-	=	M	]	m	}
14	E	SO		.	>	N	^	n	~
15	F	SI		/	?	O	_	o	

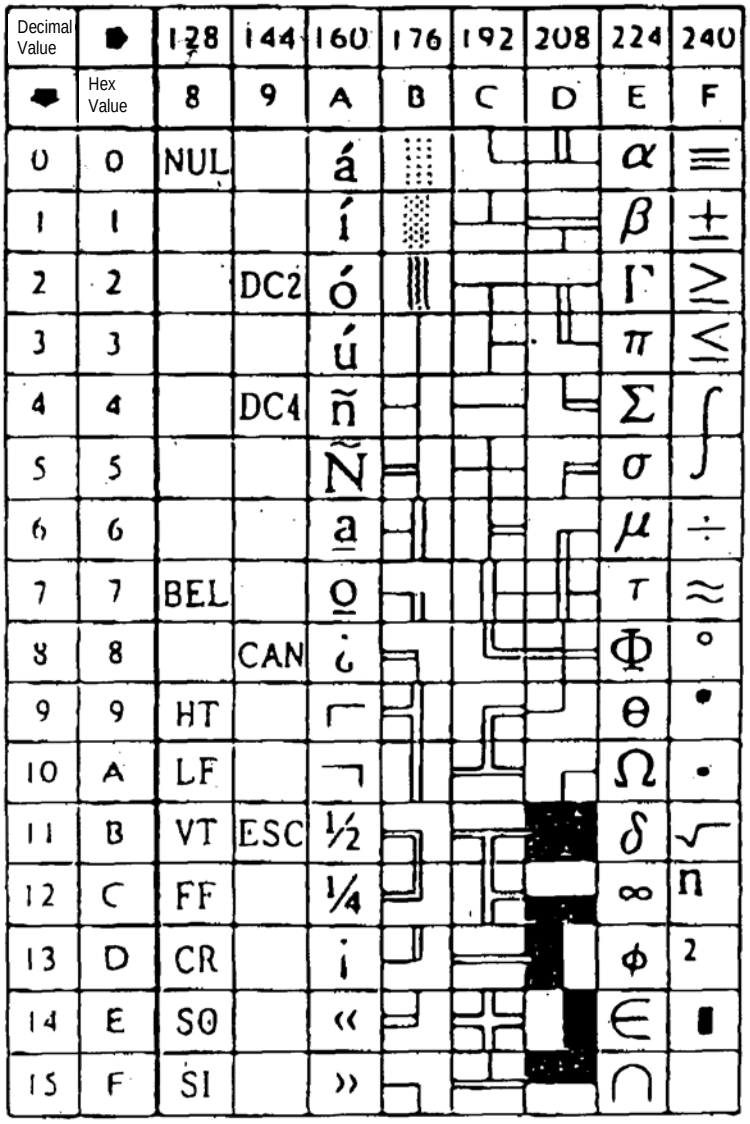
English mode (ESC h 0 + ESC 7)

ASCII character set 1 (hex 00 through hex 7F)

Decimal Value	Hex Value	0	16	32	48	64	80	96	112
		0	1	2	3	4	5	6	7
0	0	NUL		BLANK (SPACE)	0	@	P	`	p
1	1			!	1	A	Q	a	q
2	2		DC2	"	2	B	R	b	r
3	3			#	3	C	S	c	s
4	4		DC4	$	4	D	T	d	t
5	5			%	5	E	U	e	u
6	6			&	6	F	V	f	v
7	7	BEL		'	7	G	W	g	w
8	8		CAN	(	8	H	X	h	x
9	9	HT		)	9	I	Y	i	y
10	A	LF		*	:	J	Z	j	z
11	B	VT	ESC	+	;	K	[	k	{
12	C	FF		,	<	L	\	l	|
13	D	CR		—	=	M	]	m	}
14	E	SO		.	>	N	^	n	~
15	F	SI		/	?	O	_	o	

English mode (ESC h 0 + ESC 7)

ASCII character set 1 (hex 80 through hex FF)



Decimal Value	Hex Value	128	144	160	176	192	208	224	240
		8	9	A	B	C	D	E	F
0	0	NUL		á	▒	└	╨	α	≡
1	1			í	▒	┴	╤	β	±
2	2		DC2	ó	▓	┬	╥	Γ	≥
3	3			ú	│	├	╙	π	≤
4	4		DC4	ñ	┤	─	╘	Σ	⌠
5	5			Ñ	╡	┼	╒	σ	⌡
6	6			a	╢	╞	╓	μ	÷
7	7	BEL		o	╖	╟	╫	τ	≈
8	8		CAN	¿	╕	╚	╪	Φ	°
9	9	HT		⌐	╣	╔	┘	Θ	∙
10	A	LF		¬	║	╩	┌	Ω	·
11	B	VT	ESC	½	╗	╦	■	δ	√
12	C	FF		¼	╝	╠		∞	n
13	D	CR		¡	╜	═	▌	φ	2
14	E	SO		«	╛	╬	▐	∈	■
15	F	SI		»	┐	╧	▀	∩	

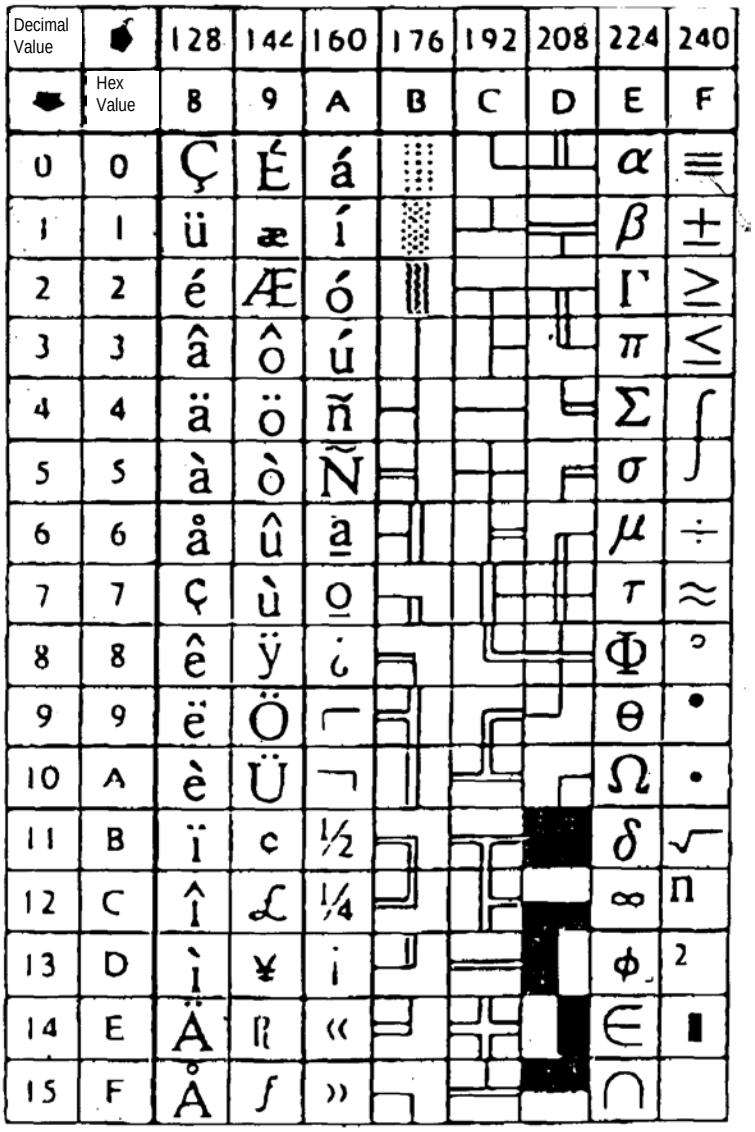
English mode (ESC h 0 + ESC 6)

ASCII character set 2 (hex 00 through hex 7F)

Decimal Value	Hex Value	0	16	32	48	64	80	96	112
		0	1	2	3	4	5	6	7
0	0	NUL			0	@	P	'	p
1	1			!	1	A	Q	a	q
2	2		DC2	"	2	B	R	b	r
3	3	♥		#	3	C	S	c	s
4	4	♦	DC4	$	4	D	T	d	t
5	5	♣	§	%	5	E	U	e	u
6	6	♠		&	6	F	V	f	v
7	7	BEL		'	7	G	W	g	w
8	8		CAN	(	8	H	X	h	x
9	9	HT		)	9	I	Y	i	y
10	A	LF		*	:	J	Z	j	z
11	B	VT	ESC	+	;	K	[	k	{
12	C	FF		,	<	L	\	l	|
13	D	CR		—	=	M	]	m	}
14	E	SO		.	>	N	^	n	~
15	F	SI		/	?	O	_	o	

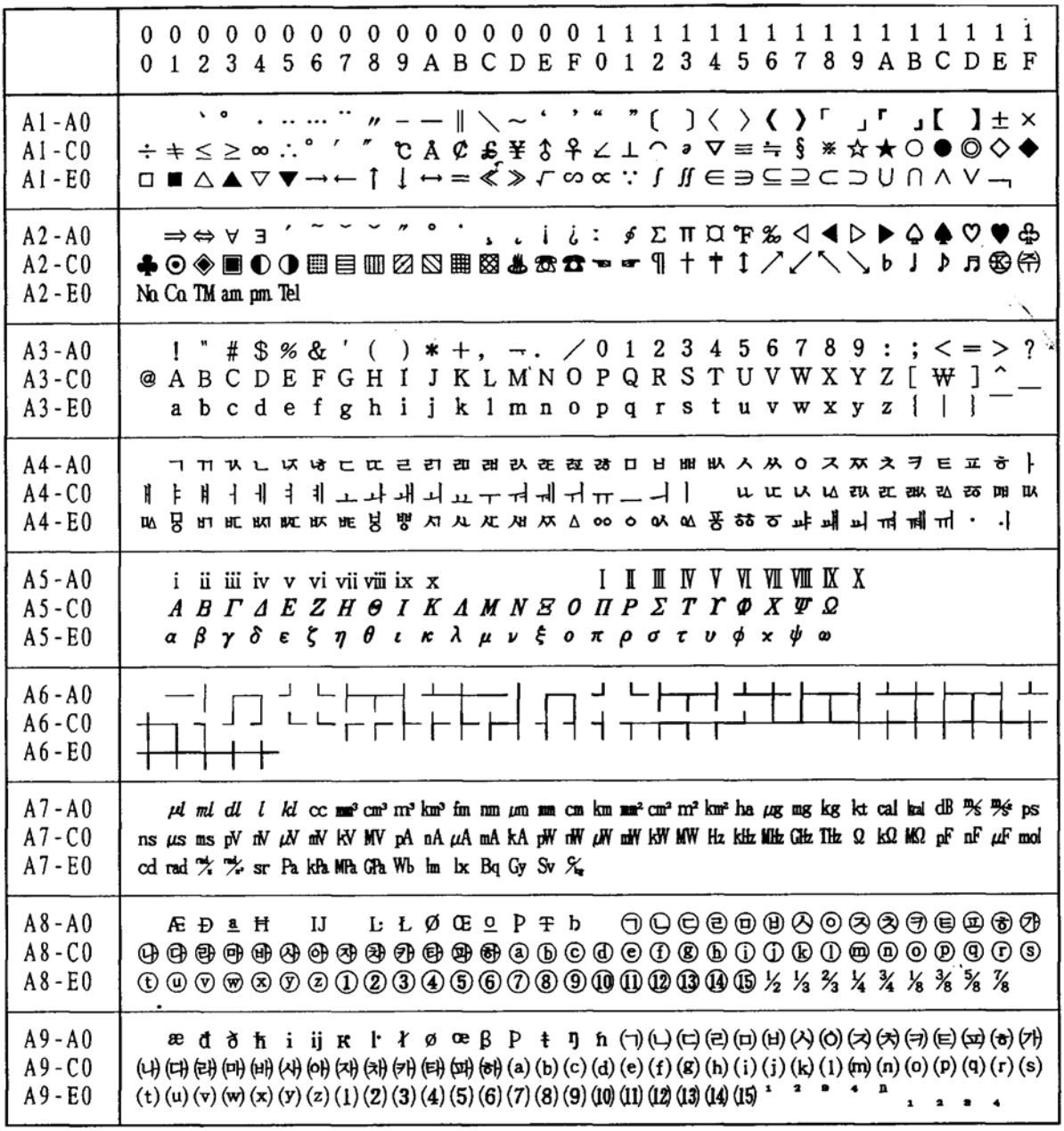
English mode (ESC h 0 + ESC 6)

ASCII character set 2 (hex 80 through hex FF)



Korean Standard Code Table (KSC5601)

Range: hex A1A1 through hex FFFE



	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 1 2 3 4 5 6 7 8 9 A B C D E F 0 1 2 3 4 5 6 7 8 9 A B C D E F
AA-A0 AA-C0 AA-E0	ぁあぃいぅうぇえぉおかがきぎくぐけげこごさざしじすずせぜそぞた だちぢっつづてでとどなにぬねのはばぱひびぴふぶぷへべぺほぼぽまみ むめもゃやゅゆょよらりるれろゎわゐゑをん
AB-A0 AB-C0 AB-E0	ァアィイゥウェエォオカガキギクグケゲコゴサザシジスズセゼソゾタ ダチヂッツヅテデトドナニヌネノハバパヒビピフブプヘベペホボポマミ ムメモャヤュユョヨラリルレロヮワヰヱヲンヴカケ
AC-A0 AC-C0 AC-E0	А Б В Г Д Е Ё Ж З И Й К Л М Н О П Р С Т У Ф Х Ц Ч Ш Щ Ъ Ы Ь Э Ю Я а б в г д е ё ж з и й к л м н о п р с т у ф х ц ч ш щ ъ ы ь э ю я
AD-A0 AD-C0 AD-E0	
AE-A0 AE-C0 AE-E0	
AF-A0 AF-C0 AF-E0	

	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 1 2 3 4 5 6 7 8 9 A B C D E F 0 1 2 3 4 5 6 7 8 9 A B C D E F
B0-A0	가각간갇갈갉갊감갑값갓갔강갖갗같갚갛개객갠갤갬갭갯갰갱갸갹갼걀
B0-C0	걋걍걔갣갤거걱건걷걸걺검겁것겄겅겆겉겊겋게겐겔겜겝겟겠겡겨격겪견
B0-E0	결겹겸겹겻겼경곁계곈곌곕곗고곡곤곧골곪곬곯곰곱곳공곶과곽관괄괇
B1-A0	광괩괏괭괘괜괠괩괬괭괴괵괸괼굄굅굇굉교굔굘굡굣구국군굳굴굵굶굻
B1-C0	굼굽굿궁궂궈궉권궐궜궝궤궷귀귁귄궐귐귑귓규균귤그극근귿글긁금급긋
B1-E0	긍긔기긱긴긷길긺김깁깃깅깆깊까깍깎깐깔깖깜깝깟깠깡깥깨깩깬깰깸
B2-A0	깹깻깼깽꺄꺅꺌꺼꺽꺾껀껄껌껍껏껐껑께껙껜껨껫껭껴껸껼껿꼇꼈꼬
B2-C0	꼭꼰꼲꼴꼼꼽꼿꽁꽂꽃꽅꽈꽉꽐꽜꽝꽤꽥꽨꽫꽴꽷꾀꾜꾸꾹꾼꿀꿇꿈꿉
B2-E0	꿋꿍꿎꿔꿜뀄뀅뀌뀍뀐뀔뀜뀝뀠뀨뀬뀰뀸뀹뀻뀽끄끅끈끊끌끎끔끕끗끙
B3-A0	끝끼끽낀낄낌낍낏낑나낙낚난낟날낡낢남납낫났낭낮낯낱낳내낵낸낼냄
B3-C0	냅냇냈냉냐냑냔냘냠냥너넉넋넌널넓넓넘넙넛넜넝넣네넥넨넬넴넵넷넸넹
B3-E0	녀녁년녈념녑녔녕녘녠노녹논놀놂놈놉놋농높놓놔놘놜놨뇌뇐뇔뇜뇝
B4-A0	뇟뇨뇩뇬뇰뇹뇻뇽누눅눈눋눌눔눕눗눙눠눴눼뉘뉜뉠뉨뉩뉴뉵뉼늄늅늉
B4-C0	느늑는늘늙늚늠늡늣능늦늪늬늰늴니닉닌닐닒님닙닛닝닢다닥닦단닫달닭
B4-E0	닮닯닳담답닷닸당닺닻닿대댁댄댈댐댑댓댔댕댜더덕덖던덛덜덞덟덤덥
B5-A0	덧덩덫덮데덱덴델뎀뎁뎃뎄뎅뎌던덜덨뎡뎨뎬도독돈돋돌돎돐돔돕돗동
B5-C0	돛돝돠돤돨돼됐되된될됨됩됫됴두둑둔둘둠둡둣둥뒤뒀뒈뒝뒤뒨뒬뒵뒷뒹
B5-E0	듀듄듈듐듕드득든듣들듦듬듭듯등듸디딕딘딛딜딤딥딧딨딩딪따딱딴딸
B6-A0	땀땁땃땄땅땋때땍땐땔땜땝땟땠땡떠떡떤떨떪떰떱떳떴떵떻떼떽뗀뗄
B6-C0	뗌뗍뗏뗐뗑뗘뗬또똑똔똘똥똬똴뙈뙤뙨뚜뚝뚠뚤뚫뚬뚱뛔뛰뛴뛸뜀뜁뜅뜨
B6-E0	뜩뜬뜯뜰뜸뜹뜻띄띈띌띔띕띠띤띨띰띱띳띵라락란랄람랍랏랐랑랒랖랗
B7-A0	래랙랜랠램랩랫랬랭랴략랸랏량러럭런럴럼럽럿렀렁렇레렉렌렐렘렙렛
B7-C0	렝려력련렬렴렵렷렸령례롄롑롓로록론롤롬롭롯롱롸뢴뢍뢨뢰뢴뢸뢈뢉뢋
B7-E0	뢩료룐룔룝룟룡루룩룬룰룸룹룻룽뤄뤘뤠뤼뤽뤤뤱뤳뤵류륙륜률륨륩
B8-A0	륫륭르륵른를름릅릇룽륫릍룦리릭린릴림립릿링마막만많맏말맑맒맘맙
B8-C0	맛망맞맡맣매맥맨맬맴맵맷맸맹맺먀먁먈먕머먹먼멀멂멈멉멋멍멎멓메멕
B8-E0	멘멜멤멥멧멨멩며멱면멸몃몄명몇메모목몫몬몰몲몸몹못몽뫄뫈뫘뫙뫼
B9-A0	뮌뮐뮙뮛뮝묘묀묠묩묫무묵묶문묻물묽묾뭄뭅뭇뭉뭍뭏뭐뭔뭘뭡뭣뭬뮈
B9-C0	뮌뮐뮤뮨뮬뮴뮷므믄믈믐믓미믹민믿밀밂밈밉밋밌밍밎밑바박밖밗반받발
B9-E0	밝밞밟밤밥밧방밭배백밴밸뱀뱁뱃뱄뱅뱉뱌뱍뱐뱝버벅번벋벌벎범법벗

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	10	11	12	13	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F
BA-A0		벙	벚	베	벡	벤	벧	벨	벰	벱	벳	벴	벵	벼	벽	변	별	볍	볏	볐	병	볕	볘	볜	보	복	볶	본	볼	봄	봅	봇
BA-C0	봉	봐	봔	봤	봬	뵀	뵈	뵉	뵌	뵐	뵘	뵙	뵤	뵨	부	북	분	붇	불	붉	붊	붐	붑	붓	붕	붙	붚	붜	붤	붰	붸	뷔
BA-E0	뷕	뷘	뷜	뷩	뷰	뷴	뷸	븀	븃	븅	브	븍	븐	블	븜	븝	븟	비	빅	빈	빌	빎	빔	빕	빗	빙	빚	빛	빠	빡	빤	
BB-A0		빨	빪	빰	빱	빳	빴	빵	빻	빼	빽	뺀	뺄	뺌	뺍	뺏	뺐	뺑	뺘	뺙	뺨	뻐	뻑	뻔	뻗	뻘	뻠	뻣	뻤	뻥	뻬	뼁
BB-C0	뼈	뼉	뼘	뼙	뼛	뼜	뼝	뽀	뽁	뽄	뽈	뽐	뽑	뽕	뾔	뾰	뿅	뿌	뿍	뿐	뿔	뿜	뿟	뿡	쀼	쁑	쁘	쁜	쁠	쁨	쁩	삐
BB-E0	삑	삔	삘	삠	삡	삣	삥	사	삭	삯	산	삳	살	삵	삶	삼	삽	삿	샀	상	샅	새	색	샌	샐	샘	샙	샛	샜	생	샤	
BC-A0		샥	샨	샬	샴	샵	샷	샹	섀	섄	섈	섐	섕	서	석	섞	섟	선	섣	설	섦	섧	섬	섭	섯	섰	성	섶	세	섹	센	셀
BC-C0	셈	셉	셋	셌	셍	셔	셕	션	셜	셤	셥	셧	셨	셩	셰	셴	셸	솅	소	속	솎	손	솔	솖	솜	솝	솟	송	솥	솨	솩	솬
BC-E0	솰	솽	쇄	쇈	쇌	쇔	쇗	쇘	쇠	쇤	쇨	쇰	쇱	쇳	쇼	쇽	숀	숄	숌	숍	숏	숑	수	숙	순	숟	술	숨	숩	숫	숭	
BD-A0		숯	숱	숲	숴	쉈	쉐	쉑	쉔	쉘	쉠	쉥	쉬	쉭	쉰	쉴	쉼	쉽	쉿	슁	슈	슉	슐	슘	슛	슝	스	슥	슨	슬	슭	슴
BD-C0	습	슷	승	시	식	신	싣	실	싫	심	십	싯	싱	싶	싸	싹	싻	싼	쌀	쌈	쌉	쌌	쌍	쌓	쌔	쌕	쌘	쌜	쌤	쌥	쌨	쌩
BD-E0	썅	써	썩	썬	썰	썲	썸	썹	썼	썽	쎄	쎈	쎌	쏀	쏘	쏙	쏜	쏟	쏠	쏢	쏨	쏩	쏭	쏴	쏵	쏸	쐈	쐐	쐤	쐬	쐰	
BE-A0		쐴	쐼	쐽	쑈	쑤	쑥	쑨	쑬	쑴	쑵	쑹	쒀	쒔	쒜	쒸	쒼	쓩	쓰	쓱	쓴	쓸	쓺	쓿	씀	씁	씌	씐	씔	씜	씨	씩
BE-C0	씬	씰	씸	씹	씻	씽	아	악	안	앉	않	알	앍	앎	앓	암	압	앗	았	앙	앝	앞	애	액	앤	앨	앰	앱	앳	앴	앵	야
BE-E0	약	얀	얄	얇	얌	얍	얏	양	얕	얗	얘	얜	얠	얩	어	억	언	얹	얻	얼	얽	얾	엄	업	없	엇	었	엉	엊	엌	엎	
BF-A0		에	엑	엔	엘	엠	엡	엣	엥	여	역	엮	연	열	엶	엷	염	엽	엾	엿	였	영	옅	옆	옇	예	옌	옐	옘	옙	옛	옜
BF-C0	오	옥	온	올	옭	옮	옰	옳	옴	옵	옷	옹	옻	와	왁	완	왈	왐	왑	왓	왔	왕	왜	왝	왠	왬	왯	왱	외	왹	왼	욀
BF-E0	욈	욉	욋	욍	요	욕	욘	욜	욤	욥	욧	용	우	욱	운	울	욹	욺	움	웁	웃	웅	워	웍	원	월	웜	웝	웠	웡	웨	
C0-A0		웩	웬	웰	웸	웹	웽	위	윅	윈	윌	윔	윕	윗	윙	유	육	윤	율	윰	윱	윳	융	윷	으	윽	은	을	읊	음	읍	읏
C0-C0	응	읒	읓	읔	읕	읖	읗	의	읜	읠	읨	읫	이	익	인	일	읽	읾	잃	임	입	잇	있	잉	잊	잎	자	작	잔	잖	잗	잘
C0-E0	잚	잠	잡	잣	잤	장	잦	재	잭	잰	잴	잼	잽	잿	쟀	쟁	쟈	쟉	쟌	쟎	쟐	쟘	쟝	쟤	쟨	쟬	저	적	전	절	젊	
C1-A0		점	접	젓	정	젖	제	젝	젠	젤	젬	젭	젯	젱	져	젼	졀	졈	졉	졌	졍	졔	조	족	존	졸	졺	좀	좁	좃	종	좆
C1-C0	좇	좋	좌	좍	좔	좝	좟	좡	좨	좼	좽	죄	죈	죌	죔	죕	죗	죙	죠	죡	죤	죵	주	죽	준	줄	줅	줆	줌	줍	줏	중
C1-E0	줘	줬	줴	쥐	쥑	쥔	쥘	쥠	쥡	쥣	쥬	쥰	쥴	쥼	즈	즉	즌	즐	즘	즙	즛	증	지	직	진	짇	질	짊	짐	집	짓	
C2-A0		징	짖	짙	짚	짜	짝	짠	짢	짤	짧	짬	짭	짯	짰	짱	째	짹	짼	쨀	쨈	쨉	쨋	쨌	쨍	쨔	쨘	쨩	쩌	쩍	쩐	쩔
C2-C0	쩜	쩝	쩟	쩠	쩡	쩨	쩽	쪄	쪘	쪼	쪽	쫀	쫄	쫌	쫍	쫏	쫑	쫓	쫘	쫙	쫠	쫬	쫴	쬈	쬐	쬔	쬘	쬠	쬡	쭁	쭈	쭉
C2-E0	쭌	쭐	쭘	쭙	쭝	쭤	쭸	쭹	쮜	쮸	쯔	쯤	쯧	쯩	찌	찍	찐	찔	찜	찝	찡	찢	찧	차	착	찬	찮	찰	참	찹	찻	
C3-A0		찼	창	찾	채	책	챈	챌	챔	챕	챗	챘	챙	챠	챤	챦	챨	챰	챵	처	척	천	철	첨	첩	첫	첬	청	체	첵	첸	첼
C3-C0	쳄	쳅	쳇	쳉	쳐	쳔	쳤	쳬	쳰	촁	초	촉	촌	촐	촘	촙	촛	총	촤	촨	촬	촹	최	쵠	쵤	쵬	쵭	쵯	쵱	쵸	춈	추
C3-E0	축	춘	출	춤	춥	춧	충	춰	췄	췌	췐	취	췬	췰	췸	췹	췻	췽	츄	츈	츌	츔	츙	츠	측	츤	츨	츰	츱	츳	층	

	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 1 2 3 4 5 6 7 8 9 A B C D E F 0 1 2 3 4 5 6 7 8 9 A B C D E F
C4-A0 C4-C0 C4-E0	치칙친칟칠칡침칩칫칭카칵칸칼캄캅캇캉캐캑캔캘캠캡캣캤캥캬캭컁커 컥컨컫컬컴컵컷컸컹케켁켄켈켐켑켓켕켜켠켤켱켸켱퀴퀵퀸퀼 콧콩콰콱콴콸쾀쾅쾌쾡쾨쾰쿄쿠쿡쿤쿨쿰쿱쿳쿵쿼퀀퀄퀑퀘퀭퀴퀵퀸퀼
C5-A0 C5-C0 C5-E0	큄큅큇큉큐큔큘큠크큭큰클큼큽킁키킥킨킬킴킵킷킹타탁탄탈탉탐탑탓 탔탕태택탠탤탬탭탯탰탱탸턍터턱턴털턺텀텁텃텄텅테텍텐텔템텝텟텡텨 텬텼톄톈토톡톤톨톰톱톳통톺톼퇀퇘퇴퇸툇툉툐투툭툰툴툼툽툿퉁퉈퉜
C6-A0 C6-C0 C6-E0	퉤튀튁튄튈튐튑튕튜튠튤튬튱트특튼튿틀틂틈틉틋틔틘틸틺틱틴틸 팀팁팃팅파팍팎판팔팖팜팝팟팠팡팥패팩팬팰팸팹팻팼팽퍄퍅퍼퍽펀펄펌 펍펏펐펑페펙펜펠펨펩펫펭펴편펼폄폅폈평폐폘폡폣포폭폰폴폼폽폿퐁
C7-A0 C7-C0 C7-E0	퐈퐝푀푄표푠푤푭푯푸푹푼푿풀품풉풋풍풔풩퓌퓐퓔퓜퓟퓨퓬퓰퓸퓻 퓽프픈플픔픕픗피픽핀필핌핍핏핑하학한할핥함합핫항해핵핸핼햄햅햇했 행햐향허헉헌헐헒험협혓형혜혝헨헬헴헵헷헹혀혁현혈혐협혓혔형혜혠
C8-A0 C8-C0 C8-E0	혤혭호혹혼홀홅홈홉홋홍홑화확환활홧황홰홱횐횃횅회획획횔횝횟횡효 횬횰횹횻후훅훈훌훑훔훗훙훠훤훨훰훵훼훽휀휄휑휘휙휜휠휨휩휫휭휴흑 흔흘흡흣흥흐흑흔흖흗흘흙흠흡흣흥흩희흰훨훰훱휭히힉힌힐힘힙힛힝
C9-A0 C9-C0 C9-E0	

	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 1 2 3 4 5 6 7 8 9 A B C D E F 0 1 2 3 4 5 6 7 8 9 A B C D E F
CA-A0	伽佳假價加可呵哥嘉嫁家暇架枷柯歌珂痂稼苛茄街袈訶賈跏軻迦駕刻却
CA-C0	各恪慤殼珏脚覺角閣侃刊墾奸姦干幹懇揀杆柬桿澗癎看磵稈竿簡肝艮艱諫
CA-E0	間竭喝曷渴碣竭葛褐蝎鞨勘坎堪嵌感憾戡敢柑橄減甘疳監瞰紺邯鑑鑒龕
CB-A0	匣岬甲胛鉀閘剛堈姜岡崗康强彊慷江畺疆糠絳綱羌腔舡薑襁講鋼降鱇介
CB-C0	价個凱塏愷愾慨改槪漑疥皆盖箇芥蓋豈鎧開喀客坑更梗羹醵倨去居巨拒据
CB-E0	據擧渠炬祛距踞車遽鉅鋸乾件健巾建愆楗腱虔蹇鍵騫乞傑杰桀儉劍劒檢
CC-A0	瞼鉗黔劫怯迲偈憩揭擊格檄激膈覡隔堅牽犬甄絹繭肩見譴遣鵑抉決潔結
CC-C0	缺訣兼謙箝謙鉗鎌京俓倞傾儆勁勍卿堷境庚徑慶憬擎敬景暻更梗涇炅焭璟
CC-E0	璥瓊痙硬磬竟競網經耕耿脛莖警輕逕鏡頃頸驚鯨係啓堺契季屆悸戒桂械
CD-A0	棨溪界癸磎稽系繫繼計誡谿階鷄古叩告呱固姑孤尻庫拷攷故敲暠枯槁沽
CD-C0	痼皐睾稿羔考股膏苦苽菰藁蠱袴誥賈辜錮雇顧高鼓哭斛曲梏穀谷鵠困坤崑
CD-E0	昆梱棍滾琨袞鯤汨滑骨供公共功孔工恐恭拱控攻珙空蛩貢鞏串寡戈果瓜
CE-A0	科菓誇課跨過鍋顆廓槨藿郭串冠官寬慣棺款灌琯瓘管罐菅觀貫關館刮恝
CE-C0	括适侊光匡壙廣曠洸昿狂珖筐胱鑛卦掛罫乖傀塊壞怪愧拐槐魁宏紘肱轟交
CE-E0	僑咬喬嬌嶠巧攪敎校橋狡皎矯絞翹膠蕎蛟較轎郊餃驕餃丘久九仇俱具勾
CF-A0	區口句咎嘔坵垢寇嶇廐懼拘救枸柩構歐毆毬求溝灸狗玖球瞿矩究絿耉臼
CF-C0	舅舊苟衢謳購軀逑邱鉤銶駒驅鳩鷗龜國局菊鞠鞫麴君窘群裙軍郡堀屈掘窟
CF-E0	宮弓穹窮芎躬倦券勸卷圈拳捲權淃眷厥獗蕨蹶闕机櫃潰詭軌饋句暑歸貴
D0-A0	鬼龜叫圭奎揆槻珪硅窺竅糾葵規赳逵閨勻均畇筠菌鈞龜橘克剋劇戟棘極
D0-C0	隙僅劤勤慬斤根槿瑾筋芹菫覲謹近饉契今妗擒昤檎琴禁禽芩衾衿襟金錦伋
D0-E0	及急扱汲級給亘兢矜肯企伎其冀嗜器圻基埼夔奇妓寄岐崎己幾忌技旗既
D1-A0	朞期杞棋棄機欺氣汽沂淇玘琦琪琦璣畸畿碁磯祁祇祈祺箕紀綺羈耆饑肌
D1-C0	記譏豈起錡錤飢饑騎騏驥麒緊佶吉拮桔金喫儀喇奈娜孺懶拏拿癩羅蘿螺裸
D1-E0	邏那樂洛烙珞落諾酪駱亂卵暖欄煖爛蘭難鸞捏捺南嵐枏楠湳濫男藍襤拉
D2-A0	納臘蠟衲囊娘廊朗浪狼郎乃來內奈奈耐冷女年撚秊念恬拈捻寧寗努勞奴
D2-C0	弩怒擄櫓爐瑙盧老蘆虜路露駑魯鷺碌祿綠菉錄鹿論壟弄濃籠聾膿農惱牢磊
D2-E0	腦賂雷尿壘屢樓淚漏累縷陋嫩訥杻紐勒肋凜凌稜綾能菱陵尼泥匿溺多茶
D3-A0	丹亶但單團壇彖斷旦檀段湍短端簞緞蛋袒鄲鍛撻澾獺疸達啖坍憺擔曇淡
D3-C0	湛潭澹痰聃膽蕈覃談譚錟沓畓答踏遝唐堂塘幢戇撞棠當糖螳黨代垈坮大對
D3-E0	岱帶待戴撡玳臺袋貸隊黛宅德悳倒刀到圖堵塗導屠島嶋度徒悼挑掉搗桃

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D4-A0	棹櫂淘渡滔濤燾盜睹禱稻萄覿賭跳蹈逃途道都鍍陶韜毒瀆牘犢獨督禿篤
D4-C0	纛讀墩惇敦盹噸沌焞燉豚頓乭突仝冬凍動同憧東桐棟洞潼疼瞳童胴蕫銅兜
D4-E0	斗杜枓痘竇荳讀豆逗頭屯臀芚遁遯鈍得嶝橙燈登等藤謄鄧騰喇懶拏癩羅
D5-A0	蘿螺裸邏樂洛烙珞絡落諾酪駱丹亂卵欄欒瀾爛蘭鸞剌辣嵐擥攬欖濫籃纜
D5-C0	藍襤覽拉臘蠟廊朗浪狼琅瑯螂郎來崍徠萊冷掠略亮倆兩凉梁樑粮粱糧良諒
D5-E0	輛量侶儷勵呂廬慮戾旅櫚濾礪藜蠣閭驢驪麗黎力曆歷瀝礫轢靂憐戀攣漣
D6-A0	煉璉練聯蓮蘲連鍊冽列劣洌烈裂廉斂殮濂簾獵令伶囹寧岺嶺怜玲笭羚翎
D6-C0	聆逞鈴零靈領齡例澧禮醴隷勞怒撈擄櫓潞瀘爐盧老蘆虜路輅露魯鷺鹵碌祿
D6-E0	綠菉錄鹿麓論壟弄朧瀧瓏籠聾儡瀨牢磊賂賚賴雷了僚寮廖料燎療瞭聊蓼
D7-A0	遼鬧龍壘婁屢樓淚漏瘻累縷蔞褸鏤陋劉旒柳榴流溜瀏琉瑠留瘤硫謬類六
D7-C0	戮陸侖倫崙淪綸輪律慄栗率隆勒肋凜凌楞稜綾菱陵俚利厘吏唎履悧李梨浬
D7-E0	犁狸理璃異痢籬罹羸莉裏裡里釐離鯉吝潾燐璘藺躪隣鱗麟林淋琳臨霖砬
D8-A0	立笠粒摩瑪痲碼磨馬魔麻寞幕漠膜莫邈万卍娩巒彎慢挽晩曼滿漫灣瞞萬
D8-C0	蔓蠻輓饅鰻唜抹末沫茉襪靺亡妄忘忙望網罔芒茫莽輞邙埋妹媒寐昧枚梅每
D8-E0	煤罵買賣邁魅脈貊陌驀麥孟氓猛盲盟萌冪覓免冕勉棉沔眄眠綿緬面麵滅
D9-A0	蔑冥名命明暝椧溟皿瞑茗蓂螟酩銘鳴袂侮冒募姆帽慕摸摹暮某模母毛牟
D9-C0	牡瑁眸矛耗芼茅謀謨貌木沐牧目睦穆鶩歿沒夢朦蒙卯墓妙廟描昴杳渺猫竗
D9-E0	苗錨務巫憮懋戊拇撫无楙武毋無珷畝繆舞茂蕪誣貿霧鵡墨默們刎吻問文
DA-A0	汶紊紋聞蚊門雯勿沕物味媚尾嵋彌微未梶楣渼湄眉米美薇謎迷靡黴岷悶
DA-C0	愍憫敏旻旼民泯玟珉緡閔密蜜謐剝博拍搏撲朴樸泊珀璞箔粕縛膊舶薄迫雹
DA-E0	駁伴半反叛拌搬攀斑槃泮潘班畔瘢盤盼磐磻礬絆般蟠返頒飯勃拔撥渤潑
DB-A0	發跋醱鉢髮魃倣傍坊妨尨幇彷房放方旁昉枋榜滂磅紡肪膀舫芳蒡蚌訪謗
DB-C0	邦防龐倍俳北培徘拜排杯湃焙盃背胚裴裵褙賠輩配陪伯佰帛柏栢白百魄幡
DB-E0	樊煩燔番磻繁蕃藩飜伐筏罰閥凡帆梵氾汎泛犯範范法琺僻劈壁擘檗璧癖
DC-A0	碧蘗闢霹便卞弁變辨辯邊別瞥鱉鼈丙倂兵屛并昞昺柄棅炳甁病秉竝輧餅
DC-C0	騈保堡報寶普步洑湺潽珤甫菩補褓譜輔伏僕匐卜宓復服福腹茯葡複覆輹輻
DC-E0	馥鰒本乶俸奉封峯峰捧棒烽熢琫縫蓬蜂逢鋒鳳不付俯傅剖副否咐埠夫婦
DD-A0	孚孵富府復扶敷斧浮溥父符簿缶腐腑膚艀芙莩訃負賦賻赴趺部釜阜附駙
DD-C0	鳧北分吩噴墳奔奮忿憤扮昐汾焚盆粉糞紛芬賁雰不佛弗彿拂崩朋棚硼繃鵬
DD-E0	丕備匕匪卑妃婢庇悲憊扉批斐枇榧比毖毗毘沸泌琵痺砒碑秕秘粃緋翡肥

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DE-A0		脾	臂	菲	蜚	裨	誹	譬	費	鄙	非	飛	鼻	嚬	嬪	彬	斌	檳	殯	浜	濱	瀕	牝	玭	貧	賓	頻	憑	氷	聘	騁	乍
DE-C0	事	些	仕	伺	似	使	俟	僿	史	司	唆	嗣	四	士	奢	娑	寫	寺	射	巳	師	徙	思	捨	斜	斯	柶	査	梭	死	沙	泗
DE-E0	渣	瀉	獅	砂	社	祀	祠	私	篩	紗	絲	肆	舍	莎	蓑	蛇	裟	詐	詞	謝	賜	赦	辭	邪	飼	駟	麝	削	數	朔	索	
DF-A0		傘	刪	山	散	汕	珊	産	疝	算	蒜	酸	霰	乷	撒	殺	煞	薩	三	參	杉	森	渗	芟	蔘	衫	揷	澁	鈒	颯	上	傷
DF-C0	像	償	商	喪	嘗	孀	尙	峠	常	床	庠	廂	想	桑	橡	湘	爽	牀	狀	相	祥	箱	翔	裳	觴	詳	象	賞	霜	塞	璽	賽
DF-E0	嗇	塞	穡	索	色	牲	生	甥	省	笙	墅	壻	嶼	序	庶	徐	恕	抒	捿	敍	暑	曙	書	栖	棲	犀	瑞	筮	絮	緖	署	
E0-A0		胥	舒	薯	西	誓	逝	鋤	黍	鼠	夕	奭	席	惜	昔	晳	析	汐	淅	潟	石	碩	蓆	釋	錫	仙	僊	先	善	嬋	宣	扇
E0-C0	敾	旋	渲	煽	琁	瑄	璇	璿	癬	禪	線	繕	羨	腺	膳	船	蘚	蟬	詵	跣	選	銑	鐥	饍	鮮	卨	屑	楔	泄	洩	渫	舌
E0-E0	薛	褻	設	說	雪	齧	剡	暹	殲	纖	蟾	贍	閃	陝	攝	涉	燮	葉	城	姓	宬	性	惺	成	星	晟	猩	珹	盛	省	筬	
E1-A0		聖	聲	腥	誠	醒	世	勢	歲	洗	稅	笹	細	說	貰	召	嘯	塑	宵	小	少	巢	所	掃	搔	昭	梳	沼	消	溯	瀟	炤
E1-C0	燒	甦	疏	疎	瘙	笑	篠	簫	素	紹	蔬	蕭	蘇	訴	逍	遡	邵	銷	韶	騷	俗	屬	束	涑	粟	續	謖	贖	速	孫	巽	損
E1-E0	蓀	遜	飡	率	宋	悚	松	淞	訟	誦	送	頌	刷	殺	灑	碎	鎖	衰	釗	修	受	嗽	囚	垂	壽	嫂	守	岫	峀	帥	愁	
E2-A0		戍	手	授	搜	收	數	樹	殊	水	洙	漱	燧	狩	獸	琇	璲	瘦	睡	秀	穗	竪	粹	綏	綬	繡	羞	脩	茱	蒐	蓚	藪
E2-C0	袖	誰	讐	輸	遂	邃	酬	銖	銹	隋	隧	隨	雖	需	須	首	髓	鬚	叔	塾	夙	孰	宿	淑	潚	熟	琡	璹	肅	菽	巡	徇
E2-E0	循	恂	旬	栒	楯	橓	殉	洵	淳	珣	盾	瞬	筍	純	脣	舜	荀	蓴	蕣	詢	諄	醇	錞	順	馴	戌	術	述	鉥	崇	崧	
E3-A0		嵩	瑟	膝	蝨	濕	拾	習	褶	襲	丞	乘	僧	勝	升	承	昇	繩	蠅	陞	侍	匙	嘶	始	媤	尸	屎	屍	市	弑	恃	施
E3-C0	是	時	枾	柴	猜	矢	示	翅	蒔	蓍	視	試	詩	諡	豕	豺	埴	寔	式	息	拭	植	殖	湜	熄	篒	蝕	識	軾	食	飾	伸
E3-E0	侁	信	呻	娠	宸	愼	新	晨	燼	申	神	紳	腎	臣	莘	薪	藎	蜃	訊	身	辛	辰	迅	失	室	實	悉	審	尋	心	沁	
E4-A0		沈	深	瀋	甚	芯	諶	什	十	拾	雙	氏	亞	俄	兒	啞	娥	峨	我	牙	芽	莪	蛾	衙	訝	阿	雅	餓	鴉	鵝	堊	岳
E4-C0	嶽	幄	惡	愕	握	樂	渥	鄂	鍔	顎	鰐	齷	安	岸	按	晏	案	眼	雁	鞍	顔	鮟	斡	謁	軋	閼	唵	岩	巖	庵	暗	癌
E4-E0	菴	闇	壓	押	狎	鴨	仰	央	怏	昻	殃	秧	鴦	厓	哀	埃	崖	愛	曖	涯	碍	艾	隘	靄	厄	扼	掖	液	縊	腋	額	
E5-A0		櫻	罌	鶯	鸚	也	倻	冶	夜	惹	揶	椰	爺	耶	若	野	弱	掠	略	約	若	葯	蒻	藥	躍	亮	佯	兩	凉	壤	孃	恙
E5-C0	揚	攘	敭	暘	梁	楊	樣	洋	瀁	煬	痒	瘍	禳	穰	糧	羊	良	襄	諒	讓	釀	陽	量	養	圄	御	於	漁	瘀	禦	語	馭
E5-E0	魚	齬	億	憶	抑	檍	臆	偃	堰	彦	焉	言	諺	孼	蘖	俺	儼	嚴	奄	掩	淹	嶪	業	円	予	余	勵	呂	女	如	廬	
E6-A0		旅	歟	汝	濾	璵	礖	礪	與	艅	茹	輿	轝	閭	餘	驪	麗	黎	亦	力	域	役	易	曆	歷	疫	繹	譯	轢	逆	驛	嚥
E6-C0	堧	姸	娟	宴	年	延	憐	戀	捐	挻	撚	椽	沇	沿	涎	涓	淵	演	漣	烟	然	煙	煉	燃	燕	璉	硏	硯	秊	筵	緣	練
E6-E0	縯	聯	衍	軟	輦	蓮	連	鉛	鍊	鳶	列	劣	咽	悅	涅	烈	熱	裂	說	閱	厭	廉	念	捻	染	殮	炎	焰	琰	艶	苒	
E7-A0		簾	閻	髥	鹽	曄	獵	燁	葉	令	囹	塋	寧	嶺	嶸	影	怜	映	暎	楹	榮	永	泳	渶	潁	濚	瀛	瀯	煐	營	獰	玲
E7-C0	瑛	瑩	瓔	盈	穎	纓	羚	聆	英	詠	迎	鈴	鍈	零	霙	靈	領	乂	倪	例	刈	叡	曳	汭	濊	猊	睿	穢	芮	藝	蘂	禮
E7-E0	裔	詣	譽	豫	醴	銳	隸	霓	預	五	伍	俉	傲	午	吾	吳	嗚	塢	墺	奧	娛	寤	悟	惡	懊	敖	旿	晤	梧	汚	澳	

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E8-A0		烏	熬	獒	筽	蜈	誤	鰲	鼇	屋	沃	獄	玉	鈺	溫	瑥	瘟	穩	縕	蘊	兀	壅	擁	瓮	甕	癰	翁	邕	雍	饔	渦	瓦
E8-C0	窩	窪	臥	蛙	蝸	訛	婉	完	宛	梡	椀	浣	玩	琓	琬	碗	緩	翫	脘	腕	莞	豌	阮	頑	曰	往	旺	枉	汪	王	倭	娃
E8-E0	歪	矮	外	嵬	巍	猥	畏	了	僚	僥	凹	堯	夭	妖	姚	寥	寮	尿	嶢	拗	搖	撓	擾	料	曜	樂	橈	燎	燿	瑤	療	
E9-A0		窈	窯	繇	繞	耀	腰	蓼	蟯	要	謠	遙	遼	邀	饒	慾	欲	浴	縟	褥	辱	俑	傭	冗	勇	埇	墉	容	庸	慂	榕	涌
E9-C0	湧	溶	熔	瑢	用	甬	聳	茸	蓉	踊	鎔	鏞	龍	于	佑	偶	優	又	友	右	宇	寓	尤	愚	憂	旴	牛	玗	瑀	盂	祐	禑
E9-E0	禹	紆	羽	芋	藕	虞	迂	遇	郵	釪	隅	雨	雩	勖	彧	旭	昱	栯	煜	稶	郁	頊	云	暈	橒	殞	澐	熉	耘	芸	蕓	
EA-A0		運	隕	雲	韻	蔚	鬱	亐	熊	雄	元	原	員	圓	園	垣	媛	嫄	寃	怨	愿	援	沅	洹	湲	源	爰	猿	瑗	苑	袁	轅
EA-C0	遠	阮	院	願	鴛	月	越	鉞	位	偉	僞	危	圍	委	威	尉	慰	暐	渭	爲	瑋	緯	胃	萎	葦	蔿	蝟	衛	褘	謂	違	韋
EA-E0	魏	乳	侑	儒	兪	劉	唯	喩	孺	宥	幼	幽	庾	悠	惟	愈	愉	揄	攸	有	杻	柔	柚	柳	楡	楢	油	洧	流	游	溜	
EB-A0		濡	猶	猷	琉	瑜	由	留	癒	硫	紐	維	臾	萸	裕	誘	諛	諭	踰	蹂	遊	逾	遺	酉	釉	鍮	類	六	堉	戮	毓	肉
EB-C0	育	陸	倫	允	奫	尹	崙	淪	潤	玧	胤	贇	輪	鈗	閏	律	慄	栗	率	聿	戎	瀜	絨	融	隆	垠	恩	慇	殷	誾	銀	隱
EB-E0	乙	吟	淫	蔭	陰	音	飮	揖	泣	邑	凝	應	膺	鷹	依	倚	儀	宜	意	懿	擬	椅	毅	疑	矣	義	艤	薏	蟻	衣	誼	
EC-A0		議	醫	二	以	伊	利	吏	夷	姨	履	已	弛	彛	怡	易	李	梨	泥	爾	珥	理	異	痍	痢	移	罹	而	耳	肄	苡	荑
EC-C0	裏	裡	貽	貳	邇	里	離	飴	餌	匿	溺	瀷	益	翊	翌	翼	謚	人	仁	刃	印	吝	咽	因	姻	寅	引	忍	湮	燐	璘	絪
EC-E0	茵	藺	蚓	認	隣	靭	靷	鱗	麟	一	佚	佾	壹	日	溢	逸	鎰	馹	任	壬	妊	姙	恁	林	淋	稔	臨	荏	賃	入	卄	
ED-A0		立	笠	粒	仍	剩	孕	芿	仔	刺	咨	姉	姿	子	字	孜	恣	慈	滋	炙	煮	玆	瓷	疵	磁	紫	者	自	茨	蔗	藉	諮
ED-C0	資	雌	作	勺	嚼	斫	昨	灼	炸	爵	綽	芍	酌	雀	鵲	孱	棧	殘	潺	盞	岑	暫	潛	箴	簪	蠶	雜	丈	仗	匠	場	墻
ED-E0	壯	奬	將	帳	庄	張	掌	暲	杖	樟	檣	欌	漿	牆	狀	獐	璋	章	粧	腸	臟	臧	莊	葬	蔣	薔	藏	裝	贓	醬	長	
EE-A0		障	再	哉	在	宰	才	材	栽	梓	渽	滓	災	縡	裁	財	載	齋	齎	爭	箏	諍	錚	佇	低	儲	咀	姐	底	抵	杵	楮
EE-C0	樗	沮	渚	狙	猪	疽	箸	紵	苧	菹	著	藷	詛	貯	躇	這	邸	雎	齟	勣	吊	嫡	寂	摘	敵	滴	狄	炙	的	積	笛	籍
EE-E0	績	翟	荻	謫	賊	赤	跡	蹟	迪	迹	適	鏑	佃	佺	傳	全	典	前	剪	塡	塼	奠	專	展	廛	悛	戰	栓	殿	氈	澱	
EF-A0		煎	琠	田	甸	畑	癲	筌	箋	箭	篆	纏	詮	輾	轉	鈿	銓	錢	鐫	電	顚	顫	餞	切	截	折	浙	癤	竊	節	絶	占
EF-C0	岾	店	漸	点	粘	霑	鮎	點	接	摺	蝶	丁	井	亭	停	偵	呈	姃	定	幀	庭	廷	征	情	挺	政	整	旌	晶	晸	柾	楨
EF-E0	檉	正	汀	淀	淨	渟	湞	瀞	炡	玎	珽	町	睛	碇	禎	程	穽	精	綎	艇	訂	諪	貞	鄭	酊	釘	鉦	鋌	錠	霆	靖	
F0-A0		靜	頂	鼎	制	劑	啼	堤	帝	弟	悌	提	梯	濟	祭	第	臍	薺	製	諸	蹄	醍	除	際	霽	題	齊	俎	兆	凋	助	嘲
F0-C0	弔	彫	措	操	早	晁	曺	曹	朝	條	棗	槽	漕	潮	照	燥	爪	璪	眺	祖	祚	租	稠	窕	粗	糟	組	繰	肇	藻	蚤	詔
F0-E0	調	趙	躁	造	遭	釣	阻	雕	鳥	族	簇	足	鏃	存	尊	卒	拙	猝	倧	宗	從	悰	慫	棕	淙	琮	種	終	綜	縱	腫	
F1-A0		踪	踵	鍾	鐘	佐	坐	左	座	挫	罪	主	住	侏	做	姝	胄	呪	周	嗾	奏	宙	州	廚	晝	朱	柱	株	注	洲	湊	澍
F1-C0	炷	珠	疇	籌	紂	紬	綢	舟	蛛	註	誅	走	躊	輳	週	酎	酒	鑄	駐	竹	粥	俊	儁	准	埈	寯	峻	晙	樽	浚	準	濬
F1-E0	焌	畯	竣	蠢	逡	遵	雋	駿	茁	中	仲	衆	重	卽	櫛	楫	汁	葺	增	憎	曾	拯	烝	甑	症	繒	蒸	證	贈	之	只	

	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	0 1 2 3 4 5 6 7 8 9 A B C D E F 0 1 2 3 4 5 6 7 8 9 A B C D E F
F2-A0	咫地址志持指摯支旨智枝枳止池汕漬知砥祉祇紙肢脂至芝芷蜘誌識贄趾
F2-C0	遲直稙稷織職唇嗔塵振搢晉晋桭榛殄津溱珍瑨璡畛疹盡眞瞋秦縉縝臻蔯袗
F2-E0	診賑軫辰進鎭陣陳震侄叱姪嫉帙桎瓆疾秩窒膣蛭質跌迭斟朕什執潗緝輯
F3-A0	鏶集徵懲澄且侘借叉嗟嵯差次此磋箚茶蹉車遮捉搾着窄錯鑿齪撰澁燦璨
F3-C0	瓚竄簒纂粲纘讃贊鑽餐饌刹察擦札紮僭參塹慘慙懺斬站讒讖倉倡創唱娼廠
F3-E0	彰愴敞昌昶暢槍滄漲猖瘡窓腟艙菖蒼債埰寀寨彩採砦綵菜蔡采釵冊柵策
F4-A0	責凄妻悽處倜刺剔尺慽戚拓擲斥滌瘠脊蹠陟隻仟千喘天川擅泉淺玔穿舛
F4-C0	薦賤踐遷釧闡阡韆凸哲喆徹撤澈綴輟轍鐵僉尖沾添甜瞻簽籤詹諂堞妾帖捷
F4-E0	牒疊睫諜貼輒廳晴淸聴菁請青鯖切剃替涕滯締諦逮遞體初剿哨憔抄招梢
F5-A0	椒楚樵炒焦硝礁礎秒稍肖艸苕草蕉貂超酢醋醮促囑燭矗蜀觸寸忖村邨叢
F5-C0	塚寵悤憁摠總聰蔥銃撮催崔最墜抽推椎楸樞湫皺秋鍬萩諏趨追鄒酋醜錐錘
F5-E0	錐雛騶鰍丑畜祝竺筑築縮蓄蹙蹴軸逐春椿瑃出朮黜充忠沖蟲衝衷悴膵萃
F6-A0	贅取吹嘴娶就炊翠聚脆臭趣醉驟鷲側仄厠惻測層侈値嗤峙幟恥梔治淄熾
F6-C0	痔痴癡稚穉緇緻置致蚩輜雉馳齒則勅飭親七柒漆侵寝枕沈浸琛砧針鍼蟄秤
F6-E0	稱快他咤唾墮妥楕打拖朶惰舵陀馱駝倬卓啄坼度托拓擢晫柝濁濯琢琸託
F7-A0	鐸呑嘆坦彈憚歎灘炭綻誕奪脫探眈耽貪塔搭楊宕帑湯糖蕩兌台太怠態殆
F7-C0	汰泰笞胎苔跆邰颱宅擇澤撑攄兎吐土討慟桶洞痛筒統通堆槌腿褪退頽偸套
F7-E0	妬投透鬪慝特闖坡婆巴把播擺杷波派爬琶破罷芭跛頗判坂板版瓣販辦鈑
F8-A0	阪八叭捌佩唄悖敗沛浿牌狽稗覇貝彭澎烹膨愎便偏扁片篇編翩遍鞭騙貶
F8-C0	坪平枰萍評吠陛幣廢弊斃肺蔽閉陛佈包匍匏咆哺圃布怖抛抱捕暴泡浦疱砲
F8-E0	胞脯苞葡蒲袍褒逋鋪飽鮑幅暴曝瀑爆輻俵剽彪慓杓標漂瓢票表豹飇飄驃
F9-A0	品稟楓諷豊風馮彼披疲皮被避陂匹弼必泌珌畢疋筆苾馝乏逼下何廈夏廈
F9-C0	昰河瑕荷蝦賀遐霞鰕堅學虐謔鶴寒恨悍旱汗漢澣瀚罕翰閑閒限韓割轄函含
F9-E0	咸啣喊檻涵緘艦銜陷鹹合哈盒蛤閤闔陝亢伉姮嫦巷恒抗杭桁沆港缸肛航
FA-A0	行降項亥偕咳垓奚孩害懈楷海瀣蟹解該諧邂駭骸劾核倖幸杏荇行享向嚮
FA-C0	珦鄕響餉饗香噓墟虛許憲櫶獻軒歇險驗奕爀赫革俔峴弦懸晛泫炫玄玆現眩
FA-E0	睨絃絢縣舷衒見賢鉉顯孑穴血頁嫌俠協夾峽挾浹狹脅脇莢鋏頬亨兄刑型
FB-A0	形泂滎瀅瀯炯熒珩瑩荊螢衡逈邢鎣馨兮彗惠慧暳蕙蹊醯鞋乎互呼壕壺好
FB-C0	岵弧戶扈昊晧毫浩淏湖滸澔濠濩瀤狐琥瑚瓠皓祜糊縞胡芦葫蒿虎號蝴護豪
FB-E0	鎬鑊顥惑或酷婚昏混渾琿魂忽惚笏哄弘汞泓洪烘紅虹訌鴻化和嬅樺火畵

	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 1 2 3 4 5 6 7 8 9 A B C D E F 0 1 2 3 4 5 6 7 8 9 A B C D E F
FC-A0 FC-C0 FC-E0	禍禾花華話譁貨靴廓擴攫確碻穫丸喚奐宦幻患換歡晥桓渙煥環紈還驩鰥 活滑猾豁闊風幌徨恍惶愰慌晃晄榥況湟滉潢煌璜皇篁簧荒蝗遑隍黃匯回廻 徊恢悔懷晦會檜淮澮灰獪繪膾茴蛔誨賄劃獲宖橫鐄哮嘵孝效斆曉梟涍淆
FD-A0 FD-C0 FD-E0	爻肴酵驍侯候厚后吼喉嗅帿後朽煦珝逅勛勳塤壎焄熏燻薰訓暈薨喧暄煊 萱卉喙毀彙徽揮暉煇諱輝隳休携烋畦虧恤譎鷸兇凶匈洶胸黑昕欣炘痕吃屹 紇訖欠欽歆吸恰洽翕興僖凞喜噫囍姬嬉希憙憘戲晞曦熙熹熺犧禧稀羲詰
FE-A0 FE-C0 FE-E0	
FF-A0 FF-C0 FF-E0	

C Contact Information

Printronix Customer Support Center

IMPORTANT **Please have the following information available prior to calling the Printronix Customer Support Center:**

- Model number
- Serial number (located on the back of the printer)
- Installed options (i.e., interface and host type if applicable to the problem)
- Configuration printout: (See “Printing A Configuration”) in your printers *Administrator’s Manual*.
- Is the problem with a new install or an existing printer?
- Description of the problem (be specific)
- Good and bad samples that clearly show the problem (faxing or emailing of these samples may be required)

Americas	(714) 368-2686
Europe, Middle East, and Africa	(31) 24 6489 311
Asia Pacific	(65) 6548 4114
China	(86) 800-999-6836

http://www.printronix.com/support.aspx

Printronix Supplies Department

Contact the Printronix Supplies Department for genuine Printronix supplies.

Americas	(800) 733-1900
Europe, Middle East, and Africa	(33) 1 46 25 19 07
Asia Pacific	(65) 6548 4100
China	(86) 400-886-5598

http://www.printronix.com/supplies-parts.aspx

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