



**EPSON ESC/P**

# Reference Manual

**December 1997**

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SEIKO EPSON Corporation. No patent liability is assumed with respect to the use of the information contained herein. While every precaution has been taken in the preparation of this book, SEIKO EPSON Corporation assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein.

EPSON and EPSON ESC/P are registered trademarks and EPSON ESC/P 2 is a trademark of SEIKO EPSON Corporation.

ActionPrinter is a trademark of EPSON America, Inc.

Centronics is a trademark of Centronics Data Computer Corporation.

**General Notice:** Other product names used herein are for identification purposes only and may be trademarks of their respective owners. EPSON disclaims any and all rights in those marks.

Copyright © 1994-1997 by SEIKO EPSON Corporation, Nagano, Japan.

---

# Contents

<b>Introduction.....</b>	<b>1</b>
About This Manual.....	2
Conventions Used in This Manual.....	2
Icons.....	2
Command names and parameters.....	3
Information organization.....	3
Nonrecommended and deleted commands.....	3
INT and MOD.....	4
<b>Command Summary.....</b>	<b>C-1</b>
Command List by Function.....	C-2
Command List by ASCII Order.....	C-6
Individual Command Explanations.....	C-9
Binary Mode Commands.....	C-216
<b>Recommended Operations.....</b>	<b>R-1</b>
Recommended Command Order.....	R-4
Set the Printing Area.....	R-5
The printable area.....	R-6
Setting left and right margins.....	R-9
Setting page length.....	R-10
Setting top and bottom margins.....	R-13
Setting bottom margin.....	R-13
Select Characters.....	R-15
Assign character tables.....	R-15
Defining user-defined characters.....	R-17
Selecting an international character set.....	R-41
Select a Font.....	R-42
Print quality (draft, LQ, or NLQ).....	R-43
Standard and scalable fonts (multipoint mode).....	R-43
Enhancements.....	R-51
Super/subscript.....	R-54
Select Supporting Features.....	R-55
Selecting unidirectional print head movement.....	R-55
Selecting print color.....	R-55
Select the Print Position.....	R-56
Moving the horizontal position.....	R-57
Moving the vertical position.....	R-60
Send Print Data.....	R-64
Sending Graphics Data.....	R-65
Extended raster graphics (ESC . 2).....	R-83
Printing Bar Codes.....	R-84
Extended ESC/P 2 Programming Guide.....	R-99
Programming examples.....	R-104

**Command Table ..... T-1**

---

24/48-Pin Printers.....T-2  
9-Pin Printers .....T-22

**Feature Summary ..... F-1**

---

24/48-Pin Printers..... F-3  
9-Pin Printers ..... F-78

**Appendix ..... A-1**

---

Character Tables ..... A-2  
Proportional Width Information..... A-21  
    Proportional width during multipoint mode (ESC/P 2 only) ..... A-21  
    24/48-pin proportional width tables..... A-21  
    9-pin proportional width tables ..... A-26  
ASCII Code Table ..... A-30  
Parallel Interface..... A-31  
Internal Serial Interface ..... A-35  
    Six-pin DIN connector type..... A-35  
    25-pin subminiature D-shell connector (female) type..... A-36  
Optional Serial Interfaces..... A-37  
Selecting PreESC/P 2 Fonts in ESC/P 2 Multipoint Mode..... A-38

**Glossary ..... G-1**

---

**Index ..... I-1**

---

---

## *Introduction*

When EPSON created the ESC/P printer control language, the industry standard for simple, sophisticated, efficient operation of dot-matrix printers was born.

With the scalable fonts, high-resolution color raster graphics, and advanced page handling available with ESC/P 2, EPSON has narrowed the gap between dot-matrix and page printers. Features previously found only on laser printers are now available at affordable dot-matrix printer prices.

This manual was developed as an aid in creating programs and drivers that take advantage of all the latest features of EPSON's printers. It is assumed the reader understands basic concepts such as bytes, ASCII codes, commands, and parameters. It is also assumed the reader can use a programming language or application program to send commands to the printer. By following the recommendations within this manual, your programs will allow EPSON printers to perform at the optimum levels they were designed for.

With the introduction of our line of high-resolution color printers, we have expanded some existing ESC/P commands and added several new ones. This manual describes all ESC/P commands, including two new compressed raster graphics modes and MicroWeave, EPSON's revolutionary technology that virtually eliminates banding in graphics.

In addition, we have provided a list of features and options available on all dot-matrix printers produced by EPSON for the American, European, and non-Japanese Pacific markets.

## About This Manual

This manual is composed of four main sections.

Command Summary	Contains a detailed description of all commands available in EPSON ESC/P, with new commands available in ESC/P 2 clearly identified. Also, the following information is included: <ul style="list-style-type: none"><li>• Differences between 9-pin and 24/48-pin commands</li><li>• Printers that do not feature particular commands</li><li>• Differences in command functions among printers</li></ul>
Recommended Operations	Detailed explanations on how to use commands to perform specific functions in the most efficient manner.
Command Table	Tables that show the commands and command parameters featured on all EPSON printers.
Feature Summary	Features and options available on all EPSON printer models, as well as DIP-switch settings on applicable printers.

In addition, the Appendix contains information on character tables, widths of proportional characters, and interfaces.

A Glossary and Index also provide convenient reference information.

The information in this manual will be updated on a regular basis to continually provide the most current information on commands and printer models.

## Conventions Used in This Manual

A number of conventions are used in this manual to aid in describing commands and distinguishing between ESC/P versions.

### Icons

One or more of the following icons appear next to the command description, indicating availability to a particular printer type.

 Available on EPSON ESC/P 2 printers

 Available on EPSON 24 /48-pin printers featuring a previous ESC/P level

 Available on 9-pin printers

## *Command names and parameters*

Command names are normally referred to in their ASCII code version. ESC (v and ESC C NUL are examples. You can find the decimal or hexadecimal values of the ASCII codes listed in the ASCII code table in the Appendix. The decimal and hexadecimal values are also listed for each command in the Command Summary section.

Command parameters are listed as variables or as decimal numbers in the text.

## *Information organization*

Commands in the Command Summary and explanations in the Recommended Operations section are organized according to the order described in Recommended Command Order.

Commands in the Command Table are organized according to ASCII order. Printer models in the Command Table are organized by date of first manufacture, with the most recent models listed first.

Printer models in the Feature Summary are divided into 24/48-pin and 9-pin sections and listed alphabetically.

## *Nonrecommended and deleted commands*

As dot-matrix printer technology has developed, EPSON has added new commands and parameters to ESC/P, and now ESC/P 2. Because of these additions, the functions of several older commands have been duplicated or have become obsolete.

Deleted commands have been deleted from ESC/P and are no longer featured on EPSON printers.

Nonrecommended commands are commands that are no longer necessary and will eventually be deleted, but remain temporarily in order to preserve compatibility with existing printer drivers. At some point, these commands will be deleted; do not use these commands in new printer programs.

## *INT and MOD*

Some command parameters may exceed 256, and require two bytes of data. These variables are listed with the subscripts L for low and H for high (for example,  $n_L$  and  $n_H$ , or  $m_L$  and  $m_H$ ).

To determine the value of these two bytes, this manual uses the INT and MOD conventions. INT indicates the integer (or whole number) part of a number, while MOD indicates the remainder of a division operation.

For example, to break the value 520 into two bytes, use the following two equations:

$$n_H = \text{INT}\left(\frac{520}{256}\right) \quad n_L = \text{MOD}\left(\frac{520}{256}\right)$$

INT simply deletes the fraction part of the number, and the value of  $n_H$  is calculated as shown below.

$$n_H = \text{INT}\left(2 \frac{8}{256}\right)$$

$$n_H = 2$$

MOD, on the other hand, results in the remainder of the division operation of the fraction part as shown below.

$$n_L = \text{MOD}\left(2 \frac{8}{256}\right)$$

$$n_L = 8$$

---

# *Command Summary*

Command List by Function.....	C-2
Command List by ASCII Order.....	C-6
Individual Command Explanations.....	C-9
Binary Mode Commands.....	C-216

## Command List by Function

The following section lists commands by their function. The shaded areas are discontinued or nonrecommended commands. For alternative command recommendations, see the command description.

Command names		ESC/P2	ESC/P	9-Pin ESC/P	Page
<b>Setting the page format</b>					
ESC ( C	Set page length in defined unit	•	—	—	C-10
ESC ( c	Set page format	•	—	—	C-11
ESC C	Set page length in lines	•	•	•	C-13
ESC C NUL	Set page length in inches	•	•	•	C-15
ESC N	Set bottom margin	•	•	•	C-17
ESC O	Cancel bottom margin	•	•	•	C-19
ESC Q	Set right margin	•	•	•	C-21
ESC I	Set left margin	•	•	•	C-23
<b>Moving the print position</b>					
CR	Carriage return	•	•	•	C-25
LF	Line feed	•	•	•	C-27
FF	Form feed	•	•	•	C-29
ESC \$	Set absolute horizontal print position	•	•	•	C-31
ESC \	Set relative horizontal print position	•	•	•	C-33
ESC ( V	Set absolute vertical print position	•	—	—	C-37
ESC ( v	Set relative vertical print position	•	—	—	C-39
ESC J	Advance print position vertically	•	•	•	C-41
HT	Tab horizontally	•	•	•	C-43
VT	Tab vertically	•	•	•	C-45
ESC f	Horizontal/vertical skip			•	C-47
BS	Backspace	•	•	•	C-48
<b>Setting the units</b>					
ESC ( U	Set unit	•	—	—	C-50
ESC 0	Select 1/8-inch line spacing	•	•	•	C-51
ESC 2	Select 1/6-inch line spacing	•	•	•	C-53
ESC 3	Set n/180-inch line spacing	•	•	—	C-55
ESC 3	Set n/216-inch line spacing	—	—	•	C-56
ESC +	Set n/360-inch line spacing	•	•	—	C-57
ESC A	Set n/60-inch line spacing	•	•	—	C-58
ESC A	Set n/72-inch line spacing	—	—	•	C-59
ESC 1	Select 7/72-inch line spacing	—	—	•	C-60
ESC D	Set horizontal tabs	•	•	•	C-61
ESC B	Set vertical tabs	•	•	•	C-63
ESC b	Set vertical tabs in VFU channels	—	•	•	C-65
ESC /	Select vertical tab channel	—	•	•	C-67
ESC e	Set fixed tab increment	—	—	•	C-69

Command names		ESC/P2	ESC/P	9-Pin ESC/P	Page
ESC a	Select justification	—	•	•	C-71
<b>Selecting characters</b>					
ESC ( t	Assign character table	•	—	•	C-73
ESC t	Select character table	•	•	•	C-77
ESC R	Select an international character set	•	•	•	C-80
ESC &	Define user-defined characters	•	•	•	C-84
ESC :	Copy ROM to RAM	•	•	•	C-89
ESC %	Select user-defined set	•	•	•	C-91
ESC x	Select LQ or draft	•	•	—	C-93
ESC x	Select NLQ or draft	—	—	•	C-94
ESC k	Select typeface	•	•	•	C-95
ESC X	Select font by pitch and point	•	—	—	C-97
ESC c	Set horizontal motion index (HMI)	•	—	—	C-99
ESC P	Select 10.5-point, 10-cpi	•	•	—	C-100
ESC P	Select 10-cpi	—	—	•	C-101
ESC M	Select 10.5-point, 12-cpi	•	•	—	C-102
ESC M	Select 12-cpi	—	—	•	C-103
ESC g	Select 10.5-point, 15-cpi	•	•	—	C-104
ESC g	Select 15-cpi	—	—	•	C-105
ESC p	Turn proportional mode on/off	•	•	•	C-106
ESC SP	Set intercharacter space	•	•	•	C-108
ESC E	Select bold font	•	•	•	C-110
ESC F	Cancel bold font	•	•	•	C-112
ESC 4	Select italic font	•	•	•	C-114
ESC 5	Cancel italic font	•	•	•	C-116
ESC !	Master select	•	•	•	C-118
ESC G	Select double-strike printing	•	•	•	C-121
ESC H	Cancel double-strike printing	•	•	•	C-123
ESC -	Turn underline on/off	•	•	•	C-125
ESC ( -	Select line/score	•	•	—	C-127
ESC S	Select superscript/subscript printing	•	•	•	C-129
ESC T	Cancel superscript/subscript printing	•	•	•	C-131
ESC q	Select character style	•	•	—	C-133
SI	Select condensed printing	•	•	•	C-134
ESC SI	Select condensed printing	•	•	•	C-136
DC2	Cancel condensed printing	•	•	•	C-138
SO	Select double-width printing (one line)	•	•	•	C-140
ESC SO	Select double-width printing (one line)	•	•	•	C-142
DC4	Cancel double-width printing (one line)	•	•	•	C-144
ESC W	Turn double-width printing on/off	•	•	•	C-146
ESC w	Turn double-height printing on/off	•	•	•	C-148

Command names		ESC/P2	ESC/P	9-Pin ESC/P	Page
<b>Control-code character printing</b>					
ESC ( ^	Print data as characters	•	—	—	C-150
ESC 6	Enable printing of upper control codes	•	•	•	C-151
ESC 7	Enable upper control codes	•	•	•	C-153
ESC l	Enable printing of control codes	—	—	•	C-155
ESC m	Select printing of upper control codes	—	—	•	C-156
<b>Mechanical control</b>					
ESC EM	Control paper loading/ejecting	•	•	•	C-157
ESC U	Turn unidirectional mode on/off	•	•	•	C-159
ESC <	Unidirectional mode (one line)	•	•	•	C-161
BEL	Beeper	•	•	•	C-163
ESC 8	Disable paper-out detector	—	—	•	C-165
ESC 9	Enable paper-out detector	—	—	•	C-166
ESC s	Select low-speed mode	—	•	•	C-167
<b>Printing color and graphics</b>					
ESC ( G	Select graphics mode	•	—	—	C-169
ESC ( i	Select MicroWeave print mode	•	—	—	C-171
ESC .	Print raster graphics	•	—	—	C-172
ESC . 2	Enter TIFF compressed mode	•	—	—	C-175
ESC *	Select bit image	•	•	•	C-177
ESC ?	Reassign bit-image mode	•	•	•	C-181
ESC K	Select 60-dpi graphics	•	•	•	C-183
ESC L	Select 120-dpi graphics	•	•	•	C-185
ESC Y	Select 120-dpi, double-speed graphics	•	•	•	C-187
ESC Z	Select 240-dpi graphics	•	•	•	C-189
ESC ^	Select 60/120-dpi, 9-pin graphics	—	—	•	C-191
ESC r	Select printing color	•	•	•	C-193
<b>Printing bar codes</b>					
ESC ( B	Bar code setup and print	•	•	•	C-195
<b>Data and memory control</b>					
ESC @	Initialize printer	•	•	•	C-198
CAN	Cancel line	•	•	•	C-200
DEL	Delete last character in buffer	•	•	•	C-202
DC1	Select printer	•	•	•	C-204
DC3	Deselect printer	•	•	•	C-206
ESC #	Cancel MSB control	•	•	•	C-208
ESC =	Set MSB to 0	•	•	•	C-210
ESC >	Set MSB to 1	•	•	•	C-212

**Deleted commands**

ESC j	Reverse paper feed	—	—	•	C-214
ESC i	Select immediate print mode	—	—	•	C-215

**Binary mode commands for ESC . 2 raster graphics compression mode**

<XFER>	Transfer raster graphics data	•	—	—	C-217
<MOVX>	Set relative horizontal position	•	—	—	C-218
<MOVY>	Set relative vertical position	•	—	—	C-219
<COLR>	Select printing color	•	—	—	C-220
<CR>	Carriage return to left-most print position	•	—	—	C-221
<EXIT>	Exit TIFF compressed mode	•	—	—	C-222
<MOVXBYTE>	Set <MOVX> unit to 8 dots	•	—	—	C-223
<MOVXDOT>	Set <MOVX> unit to 1 dot	•	—	—	C-224

## Command List by ASCII Order

The following section lists commands by their ASCII order. The shaded areas are discontinued or nonrecommended commands. For alternative command recommendations, see the specific command description. For discontinued commands, see “Deleted commands” on page C-5.

	Command names	ESC/P2	ESC/P	9-Pin ESC/P	Page
BEL	Beeper	•	•	•	C-163
BS	Backspace	•	•	•	C-48
HT	Tab horizontally	•	•	•	C-43
LF	Line feed	•	•	•	C-27
VT	Tab vertically	•	•	•	C-45
FF	Form feed	•	•	•	C-29
CR	Carriage return	•	•	•	C-25
SO	Select double-width printing (one line)	•	•	•	C-140
SI	Select condensed printing	•	•	•	C-134
DC1	Select printer	•	•	•	C-204
DC2	Cancel condensed printing	•	•	•	C-138
DC3	Deselect printer	•	•	•	C-206
DC4	Cancel double-width printing (one line)	•	•	•	C-144
CAN	Cancel line	•	•	•	C-200
ESC SO	Select double-width printing (one line)	•	•	•	C-142
ESC SI	Select condensed printing	•	•	•	C-136
ESC EM	Control paper loading/ejecting	•	•	•	C-157
ESC SP	Set intercharacter space	•	•	•	C-108
ESC !	Master select	•	•	•	C-118
ESC #	Cancel MSB control	•	•	•	C-208
ESC \$	Set absolute horizontal print position	•	•	•	C-31
ESC %	Select user-defined set	•	•	•	C-91
ESC &	Define user-defined characters	•	•	•	C-84
ESC ( -	Select line/score	•	•	—	C-127
ESC ( B	Bar code setup and print	•	•	•	C-195
ESC ( C	Set page length in defined unit	•	—	—	C-10
ESC ( G	Select graphics mode	•	—	—	C-169
ESC ( U	Set unit	•	—	—	C-50
ESC ( V	Set absolute vertical print position	•	—	—	C-37
ESC ( ^	Print data as characters	•	—	—	C-150
ESC ( c	Set page format	•	—	—	C-11
ESC ( i	Select MicroWeave print mode	•	—	—	C-171
ESC ( t	Assign character table	•	—	•	C-73
ESC ( v	Set relative vertical print position	•	—	—	C-39
ESC *	Select bit image	•	•	•	C-177
ESC +	Set n/360-inch line spacing	•	•	—	C-57
ESC -	Turn underline on/off	•	•	•	C-125
ESC .	Print raster graphics	•	—	—	C-172
ESC . 2	Enter TIFF compressed mode	•	—	—	C-175

Command names		ESC/P2	ESC/P	9-Pin ESC/P	Page
ESC /	Select vertical tab channel	—	•	•	C-67
ESC 0	Select 1/8-inch line spacing	•	•	•	C-51
ESC 1	Select 7/72-inch line spacing	—	—	•	C-60
ESC 2	Select 1/6-inch line spacing	•	•	•	C-53
ESC 3	Set n/180-inch line spacing	•	•	—	C-55
ESC 3	Set n/216-inch line spacing	—	—	•	C-56
ESC 4	Select italic font	•	•	•	C-114
ESC 5	Cancel italic font	•	•	•	C-116
ESC 6	Enable printing of upper control codes	•	•	•	C-151
ESC 7	Enable upper control codes	•	•	•	C-153
ESC 8	Disable paper-out detector	—	—	•	C-165
ESC 9	Enable paper-out detector	—	—	•	C-166
ESC :	Copy ROM to RAM	•	•	•	C-89
ESC <	Unidirectional mode (one line)	•	•	•	C-161
ESC =	Set MSB to 0	•	•	•	C-210
ESC >	Set MSB to 1	•	•	•	C-212
ESC ?	Reassign bit-image mode	•	•	•	C-181
ESC @	Initialize printer	•	•	•	C-198
ESC A	Set n/60-inch line spacing	•	•	—	C-58
ESC A	Set n/72-inch line spacing	—	—	•	C-59
ESC B	Set vertical tabs	•	•	•	C-63
ESC C	Set page length in lines	•	•	•	C-13
ESC C NUL	Set page length in inches	•	•	•	C-15
ESC D	Set horizontal tabs	•	•	•	C-61
ESC E	Select bold font	•	•	•	C-110
ESC F	Cancel bold font	•	•	•	C-112
ESC G	Select double-strike printing	•	•	•	C-121
ESC H	Cancel double-strike printing	•	•	•	C-123
ESC I	Enable printing of control codes	—	—	•	C-155
ESC J	Advance print position vertically	•	•	•	C-41
ESC K	Select 60-dpi graphics	•	•	•	C-183
ESC L	Select 120-dpi graphics	•	•	•	C-185
ESC M	Select 10.5-point, 12-cpi	•	•	—	C-102
ESC M	Select 12-cpi	—	—	•	C-103
ESC N	Set bottom margin	•	•	•	C-17
ESC O	Cancel bottom margin	•	•	•	C-19
ESC P	Select 10.5-point, 10-cpi	•	•	—	C-100
ESC P	Select 10-cpi	—	—	•	C-101
ESC Q	Set right margin	•	•	•	C-21
ESC R	Select an international character set	•	•	•	C-80
ESC S	Select superscript/subscript printing	•	•	•	C-129
ESC T	Cancel superscript/subscript printing	•	•	•	C-131
ESC U	Turn unidirectional mode on/off	•	•	•	C-159
ESC W	Turn double-width printing on/off	•	•	•	C-146

Command names		ESC/P2	ESC/P	9-Pin ESC/P	Page
ESC X	Select font by pitch and point	•	—	—	C-97
ESC Y	Select 120-dpi, double-speed graphics	•	•	•	C-187
ESC Z	Select 240-dpi graphics	•	•	•	C-189
ESC \	Set relative horizontal print position	•	•	•	C-33
ESC ^	Select 60/120-dpi, 9-pin graphics	—	—	•	C-191
ESC a	Select justification	—	•	•	C-71
ESC b	Set vertical tabs in VFU channels	—	•	•	C-65
ESC c	Set horizontal motion index (HMI)	•	—	—	C-99
ESC e	Set fixed tab increment	—	—	•	C-69
ESC f	Horizontal/vertical skip	—	—	•	C-47
ESC g	Select 10.5-point, 15-cpi	•	•	—	C-104
ESC g	Select 15-cpi	—	—	•	C-105
ESC i	Select immediate print mode	—	—	•	C-215
ESC j	Reverse paper feed	—	—	•	C-214
ESC k	Select typeface	•	•	•	C-95
ESC l	Set left margin	•	•	•	C-23
ESC m	Select printing of upper control codes	—	—	•	C-156
ESC p	Turn proportional mode on/off	•	•	•	C-106
ESC q	Select character style	•	•	—	C-133
ESC r	Select printing color	•	•	•	C-193
ESC s	Select low-speed mode	—	•	•	C-167
ESC t	Select character table	•	•	•	C-77
ESC w	Turn double-height printing on/off	•	•	•	C-148
ESC x	Select LQ or draft	•	•	—	C-93
ESC x	Select NLQ or draft	—	—	•	C-94
DEL	Delete last character in buffer	•	•	•	C-202

#### Binary mode commands for ESC . 2

<XFER>	Transfer raster graphics data	•	—	—	C-217
<MOVX>	Set relative horizontal position	•	—	—	C-218
<MOVY>	Set relative vertical position	•	—	—	C-219
<COLR>	Select printing color	•	—	—	C-220
<CR>	Carriage return to left-most print position	•	—	—	C-221
<EXIT>	Exit TIFF compressed mode	•	—	—	C-222
<MOVXBYTE>	Set <MOVX> unit to 8 dots	•	—	—	C-223
<MOVXDOT>	Set <MOVX> unit to 1 dot	•	—	—	C-224

## Individual Command Explanations

The following section describes the commands available in all ESC/P versions.

At the head of each command is the command title and one or more icons. The meaning of these icons is as follows:

**ESC/P 2** The command explanation applies to 24/48-pin printers featuring ESC/P 2. “Function” explanations are based on ESC/P 2.

**ESC/P** The command explanation applies to 24/48-pin printers featuring previous ESC/P levels.

**9-Pin ESC/P** The command explanation applies to 9-pin printers.

If an ESC/P 2 command is also available in previous ESC/P levels, any differences in function are explained under the “Model-dependent variations” heading.

The explanations in these commands apply to the printers listed below:

<b>ESC/P 2</b>	ActionPrinter 3250 ActionPrinter 5000+ DLQ-3000 ('96 ~) LQ-300 LQ-670 LQ-1070+ LQ-2170 Stylus 800 Stylus COLOR	ActionPrinter 3260 ActionPrinter 5500 LQ-100 LQ-570 LQ-870 LQ-1170 Stylus 300 Stylus 800+ SQ-870	ActionPrinter 5000 DLQ-3000 LQ-150 LQ-570+ LQ-1070 LQ-2070 Stylus 400 Stylus 1000 SQ-1170
----------------	--	--	---

<b>ESC/P</b>	ActionPrinter 3000 ActionPrinter 4500 LQ-200 LQ-500 LQ-850 LQ-860+ LQ-1050 LQ-1060+ SQ-2550	ActionPrinter 4000 ActionPrinter L-1000 LQ-400 LQ-510 LQ-850+ LQ-950 LQ-1050+ LQ-2550 TLQ-4800	ActionPrinter L-750 DLQ-2000 LQ-450 LQ-550 LQ-860 LQ-1010 LQ-1060 SQ-850 TSQ-4800
--------------	---	--	---

<b>9-Pin ESC/P</b>	ActionPrinter T-750 ActionPrinter 2000 DFX-5000 FX-850 FX-1170 LX-300 LX-810 LX-1050+	ActionPrinter T-1000 ActionPrinter 2250 DFX-5000+ FX-870 FX-2170 LX-400 LX-850	ActionPrinter Apex 80 ActionPrinter 2500 DFX-8000 FX-1050 LX-100 LX-800 LX-1050
--------------------	--	--	---

**Format**

ASCII	ESC	(	C	n <sub>L</sub>	n <sub>H</sub>	m <sub>L</sub>	m <sub>H</sub>
Hex	1B	28	43	n <sub>L</sub>	n <sub>H</sub>	m <sub>L</sub>	m <sub>H</sub>
Decimal	27	40	67	n <sub>L</sub>	n <sub>H</sub>	m <sub>L</sub>	m <sub>H</sub>

**Parameter range**

$$n_L = 2, n_H = 0$$

$$0 < ((m_H \times 256) + m_L) \times (\text{defined unit}) \leq 22$$

**Function**

Sets the page length in the specified number of units—previously defined with the ESC ( U command—according to the following formula:

$$(\text{page length}) = ((m_H \times 256) + m_L) \times (\text{defined unit})$$

$$m_H = \text{INT} \left( \frac{(\text{page length}) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

$$m_L = \text{MOD} \left( \frac{(\text{page length}) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

**Default**

Depends on default-setting mode or DIP-switch setting

**Notes**

- This command is available only on printers featuring ESC/P 2.
- Set the page length before paper is loaded or when the print position is at the top-of-form position. Otherwise, the current print position becomes the top-of-form position (this results in undesirable contradictions between the actual and logical page settings).
- Setting the page length cancels the top and bottom-margin settings.
- Changing the defined unit does not affect the current page-length setting.

**Printers not featuring this command**

All non-ESC/P 2 printers

**Model-dependent variations**

None

**Related topics**

ESC ( U, ESC ( c, ESC C, FF, LF, ESC N, Set the Print Area, Setting page length

**Format**

ASCII	ESC	(	c	nL	nH	tL	tH	bL	bH
Hex	1B	28	63	nL	nH	tL	tH	bL	bH
Decimal	27	40	99	nL	nH	tL	tH	bL	bH

**Parameter range**

$$n_L = 4, n_H = 0$$

$$((t_H \times 256) + t_L) < ((b_H \times 256) + b_L) \quad \text{top margin} < \text{bottom margin}$$

$$((b_H \times 256) + b_L) \times (\text{defined unit}) \leq 22 \quad \text{bottom margin} < 22 \text{ inches}$$

**Function**

Sets the top and bottom margins in the defined units—set with the ESC ( U command—according to the following formulas:

$$(\text{top margin}) = ((t_H \times 256) + t_L) \times (\text{defined unit})$$

$$t_H = \text{INT} \left( \frac{(\text{top margin}) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

$$t_L = \text{MOD} \left( \frac{(\text{top margin}) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

$$(\text{bottom margin}) = ((b_H \times 256) + b_L) \times (\text{defined unit})$$

$$b_H = \text{INT} \left( \frac{(\text{bottom margin}) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

$$b_L = \text{MOD} \left( \frac{(\text{bottom margin}) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

**Default**

Continuous paper: None

Single-sheet paper: (top margin) = top-of-form position  
(bottom margin) = last printable line

## *Notes*

- This command is available only on printers featuring ESC/P 2.
- Measure both top and bottom margins from the top edge of the page.
- The baseline for printing characters on the first line is 20/180 inch below the top-margin position.
- Send this command before paper is loaded, or when paper is at the top-of-form position. Otherwise, the current print position becomes the top-margin position (this results in undesirable contradictions between the actual and logical page settings).
- This command cancels any previous top and bottom-margin settings.
- Changing the defined unit does not affect the current page-length setting.

## *Printers not featuring this command*

All non-ESC/P 2 printers

## *Model-dependent variations*

None

## *Related topics*

ESC ( U, ESC ( C, ESC C, FF, LF, ESC ( V, ESC ( v, ESC N, Set the Printing Area, Setting top and bottom margins

**Format**

ASCII	ESC	C	n
Hex	1B	43	n
Decimal	27	67	n

**Parameter range**

$$1 \leq n \leq 127$$

$$0 < n \times (\text{current line spacing}) \leq 22 \text{ inches}$$

**Function**

Sets the page length to n lines in the current line spacing

**Default**

Depends on default-setting mode or DIP-switch setting

**Notes**

- Set the page length before paper is loaded or when the print position is at the top-of-form position. Otherwise, the current print position becomes the top-of-form position.
- Setting the page length cancels the top and bottom margin settings.
- Changing the line spacing does not affect the current page-length setting.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC ( C, ESC N, FF, LF, Set the Printing Area, Setting page length

**Format**

ASCII	ESC	C	n
Hex	1B	43	n
Decimal	27	67	n

**Parameter range**

$$1 \leq n \leq 127$$

$$0 < n \times (\text{current line spacing}) \leq 22 \text{ inches}$$

**Function**

Sets the page length to n lines in the current line spacing

**Default**

Depends on default-setting mode or DIP-switch setting

**Notes**

- Set the page length before paper is loaded or when the print position is at the top-of-form position. Otherwise, the current print position becomes the top-of-form position.
- Setting the page length cancels the bottom margin setting.
- Changing the line spacing does not affect the current page-length setting.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC N, FF, LF, Set the Printing Area, Setting page length

**Format**

ASCII	ESC	C	NUL	n
Hex	1B	43	00	n
Decimal	27	67	0	n

**Parameter range**

$$1 \leq n \leq 22$$

**Function**

Sets the page length to n inches

**Default**

Depends on default-setting mode or DIP-switch setting

**Notes**

- This command sets the page length in 1-inch increments only.
- Set the page length before paper is loaded or when the print position is at the top-of-form position. Otherwise, the current print position becomes the top-of-form position.
- Setting the page length cancels the top and bottom-margin settings.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC ( C, ESC N, FF, LF, Set the Printing Area, Setting page length

**Format**

ASCII	ESC	C	NUL	n
Hex	1B	43	00	n
Decimal	27	67	0	n

**Parameter range**

$$1 \leq n \leq 22$$

**Function**

Sets the page length to n inches

**Default**

Depends on default-setting mode or DIP-switch setting

**Notes**

- This command sets the page length in 1-inch increments only.
- Set the page length before paper is loaded or when the print position is at the top-of-form position. Otherwise, the current print position becomes the top-of-form position.
- Setting the page length cancels the bottom-margin setting.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC N, FF, LF, Set the Printing Area, Setting page length

**Format**

ASCII	ESC	N	n
Hex	1B	4E	n
Decimal	27	78	n

**Parameter range**

$0 < n \leq 127$

$0 < (\text{current line spacing}) \times n < (\text{page length})$

**Function**

Sets the bottom margin on continuous paper to n lines (in the current line spacing) from the top-of-form position on the next page.

**Default**

Either no margin or 1-inch margin, depending on the DIP-switch setting

**Notes**

- The bottom margin set with the ESC N command is ignored when printing on single sheets.
- With ESC/P 2 printers, use the ESC ( c command instead; this allows you to set both top and bottom margins on continuous and single-sheet paper.
- Sending this command cancels the top-margin setting.
- This was formerly called the “Set skip-over-perforation” command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC ( C, ESC ( c, ESC C, FF, LF, Set the Printing Area, Setting bottom margin

**Format**

ASCII	ESC	N	n
Hex	1B	4E	n
Decimal	27	78	n

**Parameter range** $0 < n \leq 127$  $0 < (\text{current line spacing}) \times n < (\text{page length})$ **Function**

Sets the bottom margin on continuous paper to n lines (in the current line spacing) from the top-of-form position on the next page

**Default**

Either no margin or 1-inch margin, depending on the default-setting mode or DIP-switch setting

**Notes**

- The bottom margin is ignored when printing on single sheets.
- This was formerly called the “Set skip-over-perforation” command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC C, FF, LF, Set the Printing Area, Setting bottom margin

**Format**

ASCII	ESC	O
Hex	1B	4F
Decimal	27	79

**Function**

    Cancels the top and bottom margin settings

**Notes**

    This was formerly called the “Cancel skip-over-perforation” command.

**Printers not featuring this command**

    None

**Model-dependent variations**

    None

**Related topics**

    ESC N, ESC ( C, ESC ( c, ESC C, FF, LF, Set the Printing Area, Setting bottom margin

**Format**

ASCII	ESC	O
Hex	1B	4F
Decimal	27	79

**Function**

     Cancels the top and bottom margin settings

**Notes**

     This was formerly called the “Cancel skip-over-perforation” command.

**Printers not featuring this command**

     None

**Model-dependent variations**

     None

**Related topics**

     ESC N, ESC C, FF, LF, Set the Printing Area, Setting bottom margin

**Format**

ASCII	ESC	Q	n
Hex	1B	51	n
Decimal	27	81	n

**Parameter range**

$$1 \leq n \leq 255$$

$$(\text{left margin}) < (\text{current pitch}) \times n \leq (\text{printable area width})$$

**Function**

Sets the right margin to n columns in the current character pitch, as measured from the left-most printable column

**Default**

The right-most column

**Notes**

- Set the right margin at the beginning of a line; the printer ignores any data preceding this command on the same line in the buffer.
- The following commands affect character pitch: ESC P, ESC M, ESC g, ESC W, ESC p, ESC SP, SI, SO, ESC !, ESC X, and ESC c.
- The printer calculates the right margin based on 10 cpi if proportional spacing is selected with the ESC p command.
- Always set the pitch before setting the margins. Do not assume what the pitch setting will be.
- Always set the margins at the beginning of a print job.
- Always set the right margin to be at least one column (at 10 cpi) larger than the left.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC I, ESC \$, ESC \, HT, ESC D, Set the Printing Area, Setting left and right margins

**Format**

ASCII	ESC	Q	n
Hex	1B	51	n
Decimal	27	81	n

**Parameter range**

$1 \leq n \leq 255$   
(left margin) < (current pitch)  $\times$  n  $\leq$  (printable area width)

**Function**

Sets the right margin to n columns in the current character pitch, as measured from the left-most printable column

**Default**

The right-most column

**Notes**

- Set the right margin at the beginning of a line; the printer ignores any data preceding this command on the same line in the buffer.
- The following commands affect character pitch: ESC P, ESC M, ESC g, ESC W, ESC p, ESC SP, SO, ESC !, and SI.
- The printer calculates the right margin based on 10 cpi if proportional spacing is selected with the ESC p command.
- Always set the pitch before setting the margins. Do not assume what the pitch setting will be.
- Always set the margins at the beginning of a print job.
- Always set the right margin to be at least two columns (at 10 cpi) greater than the left.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC I, ESC \$, ESC \, HT, ESC D, Set the Printing Area, Setting left and right margins

**Format**

ASCII	ESC	l	n
Hex	1B	6C	n
Decimal	27	108	n

**Parameter range**

$1 \leq n \leq 255$

$0 \leq (\text{left margin}) < (\text{right margin})$

80-column printers:  $0 \leq (\text{left margin}) \leq 4.50$  inches

110-column printers:  $0 \leq (\text{left margin}) \leq 7.00$  inches

136-column printers:  $0 \leq (\text{left margin}) \leq 8.00$  inches

**Function**

Sets the left margin to n columns in the current character pitch, as measured from the left-most printable column

**Defaultf**

The left-most column (column 1)

**Notes**

- Set the left margin at the beginning of a line; the printer ignores any data preceding this command on the same line in the buffer.
- The following commands affect character pitch: ESC X, ESC c, ESC P, ESC M, ESC g, ESC W, ESC p, ESC SP, SO, ESC ! and SI.
- Always set the pitch before setting the margins. Do not assume what the pitch setting will be.
- Always set the margins at the beginning of a print job.
- Always set the left margin to be at least one column (at 10 cpi) less than the right.
- The printer calculates the left margin based on 10 cpi if proportional spacing is selected with the ESC p command.
- Moving the left-margin position moves the tab settings by the same distance.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC Q, ESC \$, ESC \, ESC D, HT, Set the Printing Area, Setting left and right margins

**Format**

ASCII	ESC	l	n
Hex	1B	6C	n
Decimal	27	108	n

**Parameter range**

$$1 \leq n \leq 255$$

$$0 \leq (\text{left margin}) < (\text{right margin})$$

**Function**

Sets the left margin to n columns in the current character pitch, as measured from the left-most printable column

**Default**

The left-most column (column 1)

**Notes**

- Set the left margin at the beginning of a line; the printer ignores any data preceding this command on the same line in the buffer.
- The following commands affect character pitch: ESC P, ESC M, ESC g, ESC W, ESC p, ESC SP, and SI.
- The printer calculates the left margin based on 10 cpi if proportional spacing is selected with the ESC p command.
- Always set the pitch before setting the margins. Do not assume what the pitch setting will be.
- Always set the margins at the beginning of a print job.
- Always set the left margin to be at least two columns (at 10 cpi) less than the right.
- Moving the left margin position moves the tab settings by the same distance.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC Q, ESC \$, ESC \, ESC D, HT, Set the Printing Area, Setting left and right margins

**Format**

ASCII	CR
Hex	0D
Decimal	13

**Function**

Moves the print position to the left-margin position

**Notes**

- Always send a CR command at the end of each line of text or graphics data.
- When automatic line-feed is selected (through DIP-switch or panel setting), the CR command is accompanied by a LF command.

**Printers not featuring this command**

None

**Model-dependent variations**

On non-ESC/P 2 printers:

The printer prints all data in the line buffer after receiving a CR command.

**Related topics**

LF, ESC I, ESC SO, SO, ESC <, ESC ., <CR>, Recommended command order, Moving the horizontal position, Send print data

**Format**

ASCII	CR
Hex	0D
Decimal	13

**Function**

- Moves the print position to the left margin position
- Prints all data in the line buffer

**Notes**

- Always send a CR command at the end of each line of text or graphics data.
- When automatic line-feed is selected (through DIP-switch or panel setting), the CR command is accompanied by a LF command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

LF, ESC I, ESC SO, SO, ESC <, ESC ., Recommended command order, Moving the horizontal position, Send print data

**Format**

ASCII	LF
Hex	0A
Decimal	10

**Function**

- Advances the vertical print position one line (in the currently set line spacing)
- Moves the horizontal print position to the left-margin position

**Notes**

- You should always send a CR command before the LF command.
- The LF command cancels one-line double-width printing selected with the SO or ESC SO commands.
- If the LF command moves the print position below the bottom margin on continuous paper, the printer advances to the top-of-form position on the next page.
- If the LF command moves the print position below the bottom-margin position, or beyond the end of the printable area on single-sheet paper, the printer ejects the paper.

**Printers not featuring this command**

None

**Model-dependent variations**

On non-ESC/P 2 printers:

- Prints all data in the line buffer
- Advances paper to the top-of-form position on the next page if the LF command moves the print position below the bottom-margin position set with the ESC N command
- Ejects single-sheet paper if the LF command moves the print position beyond the end of the printable area

**Related topics**

FF, ESC I, ESC SO, SO, ESC <, ESC ., ESC C, ESC N, Recommended command order, Select the print position, Graphics mode, Moving the vertical position, Send print data

**Format**

ASCII	LF
Hex	0A
Decimal	10

**Function**

- Advances the vertical print position one line (in the currently set line spacing)
- Moves the horizontal print position to the left-margin position
- Prints all data in the buffer

**Notes**

- You should always send a CR command before the LF command.
- The LF command cancels one-line double-width printing selected with the SO or ESC SO commands.
- If the LF command moves the print position below the bottom margin on continuous paper, the printer advances to the top-of-form position on the next page.
- If the LF command moves the print position beyond the end of the printable area on single-sheet paper, the printer ejects the paper.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

FF, ESC I, ESC SO, SO, ESC <, ESC ., ESC C, ESC N, Recommended command order, Select the print position, Graphics mode, Moving the vertical position, Send print data

**Format**

ASCII	FF
Hex	0C
Decimal	12

**Function**

- Advances the vertical print position on continuous paper to the top-margin position of the next page
- Ejects single-sheet paper
- Moves the horizontal print position to the left-margin position
- Prints all data in the buffer

**Notes**

- Always send a FF command at the end of each page and each print job.
- It is recommended to always send a CR command before the FF command.
- The FF command cancels one-line double-width printing selected with the SO or ESC SO commands.

**Printers not featuring this command**

None

**Model-dependent variations**

On non-ESC/P 2 printers:

Advances continuous paper to the current top-of-form position on the next page

**Related topics**

LF, ESC I, ESC SO, SO, ESC <, ESC., ESC C, ESC N, Recommended Command Order, Graphics mode, Moving the vertical position, Send Print Data

*Format*

ASCII	FF
Hex	0C
Decimal	12

*Function*

- Advances the vertical print position on continuous paper to the top-of-form position of the next page
- Ejects single-sheet paper
- Moves the horizontal print position to the left-margin position
- Prints all data in the buffer

*Notes*

- Always send a FF command at the end of each page and each print job.
- It is recommended to always send a CR command before the FF command.
- The FF command cancels one-line double-width printing selected with the SO or ESC SO commands.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

LF, ESC I, SO, ESC <, ESC C, ESC N, Recommended Command Order, Graphics mode, Moving the vertical position, Send Print Data

**Format**

ASCII	ESC	\$	n <sub>L</sub>	n <sub>H</sub>
Hex	1B	24	n <sub>L</sub>	n <sub>H</sub>
Decimal	27	36	n <sub>L</sub>	n <sub>H</sub>

**Parameter range**

$$0 \leq n_H \leq 127$$

$$0 \leq n_L \leq 255$$

**Function**

Moves the horizontal print position to the position specified by the following formula:

$$(\text{horizontal position}) = ((n_H \times 256) + n_L) \times (\text{defined unit}) + (\text{left margin})$$

$$n_H = \text{INT} \left( \frac{((\text{horizontal position}) - (\text{left-margin position})) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

$$n_L = \text{MOD} \left( \frac{((\text{horizontal position}) - (\text{left-margin position})) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

**Notes**

- Set the defined unit with the ESC ( U command.
- The default defined unit setting for this command is 1/60 inch.
- The new position is measured from the current left-margin position.
- The printer ignores this command if the specified position is to the right of the right margin.

**Printers not featuring this command**

None

**Model-dependent variations**

On non-ESC/P 2 printers:

The unit of movement is fixed at 1/60 inch.

**Related topics**

ESC \, ESC I, ESC Q, HT, CR, LF, FF, ESC ( U, Moving the horizontal position

**Format**

ASCII	ESC	\$	n <sub>L</sub>	n <sub>H</sub>
Hex	1B	24	n <sub>L</sub>	n <sub>H</sub>
Decimal	27	36	n <sub>L</sub>	n <sub>H</sub>

**Parameter range**

$$0 \leq n_H \leq 127$$

$$0 \leq n_L \leq 255$$

**Function**

Moves the horizontal print position to the position specified by the following formula:

$$(\text{horizontal position}) = ((n_H \times 256) + n_L) \times (1/60 \text{ inch}) + (\text{left margin})$$

$$n_H = \text{INT} \left( \frac{((\text{horizontal position}) - (\text{left-margin position})) \times \frac{1}{(1/60 \text{ inch})}}{256} \right)$$

$$n_L = \text{MOD} \left( \frac{((\text{horizontal position}) - (\text{left-margin position})) \times \frac{1}{(1/60 \text{ inch})}}{256} \right)$$

**Notes**

- The new position is measured from the current left-margin position.
- The printer ignores this command if the specified position is to the right of the right margin.

**Printers not featuring this command**

ActionPrinter Apex 80, ActionPrinter T-1000, ActionPrinter 2000, ActionPrinter 2250, ActionPrinter 2500, LX-100, LX-300, LX-400, LX-800, LX-810, LX-850, LX-1050

**Model-dependent variations**

None

**Related topics**

ESC \, ESC I, ESC Q, HT, CR, LF, FF, Moving the horizontal position

**Format**

ASCII	ESC	\	n <sub>L</sub>	n <sub>H</sub>
Hex	1B	5C	n <sub>L</sub>	n <sub>H</sub>
Decimal	27	92	n <sub>L</sub>	n <sub>H</sub>

**Parameter range**

$$0 \leq n_H \leq 127$$

$$0 \leq n_L \leq 255$$

**Function**

Moves the horizontal print position left or right from the current position, as specified by the following formula:

$$(\text{horizontal position}) = ((n_H \times 256) + n_L) \times (\text{defined unit}) + (\text{current position})$$

For positive (right) movement:

$$n_H = \text{INT} \left( \frac{((\text{horizontal position}) - (\text{current position})) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

$$n_L = \text{MOD} \left( \frac{((\text{horizontal position}) - (\text{current position})) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

For negative (left) movement:

$$n_H = 32768 - \text{INT} \left( \frac{((\text{current position}) - (\text{horizontal position})) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

$$n_L = 32768 - \text{MOD} \left( \frac{((\text{current position}) - (\text{horizontal position})) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

**Notes**

- Set the defined unit with the ESC ( U command.
- The default defined unit for this command is 1/120 inch in draft mode, and 1/180 inch in LQ mode.
- The printer ignores this command if it would move the print position outside the printing area.

*Printers not featuring this command*

None

*Model-dependent variations*

On non-ESC/P 2 printers, the unit of movement is fixed at 1/120 inch in draft mode and 1/180 inch in LQ mode.

*Related topics*

ESC \$, ESC I, ESC Q, ESC ( U, HT, CR, LF, FF, Moving the horizontal position

**Format**

ASCII	ESC	\	n <sub>L</sub>	n <sub>H</sub>
Hex	1B	5C	n <sub>L</sub>	n <sub>H</sub>
Decimal	27	92	n <sub>L</sub>	n <sub>H</sub>

**Parameter range**

$$0 \leq n_H \leq 127$$

$$0 \leq n_L \leq 255$$

**Function**

Moves the horizontal print position left or right from the current position, as specified by the following formula:

$$(\text{horizontal position}) = ((n_H \times 256) + n_L) \times (1/120 \text{ inch}) + (\text{current margin})$$

For positive (right) movement:

$$n_H = \text{INT} \left( \frac{((\text{horizontal position}) - (\text{current position})) \times \frac{1}{(1/120 \text{ inch})}}{256} \right)$$

$$n_L = \text{MOD} \left( \frac{((\text{horizontal position}) - (\text{current position})) \times \frac{1}{(1/120 \text{ inch})}}{256} \right)$$

For negative (left) movement:

$$n_H = 32768 - \text{INT} \left( \frac{((\text{current position}) - (\text{horizontal position})) \times \frac{1}{(1/120 \text{ inch})}}{256} \right)$$

$$n_L = 32768 - \text{MOD} \left( \frac{((\text{current position}) - (\text{horizontal position})) \times \frac{1}{(1/120 \text{ inch})}}{256} \right)$$

**Notes**

The printer ignores this command if it would move the print position outside the printable area.

*Printers not featuring this command*

ActionPrinter Apex 80, ActionPrinter T-1000, ActionPrinter 2000, ActionPrinter 2250,  
ActionPrinter 2500, LX-100, LX-300, LX-400, LX-800, LX-810, LX-850, LX-1050

*Model-dependent variations*

DFX-5000, DFX-8000: This command can be used only in LQ mode.

*Related topics*

ESC \, ESC I, ESC Q, HT, CR, LF, FF, Moving the horizontal position

**Format**

ASCII	ESC	(	V	n <sub>L</sub>	n <sub>H</sub>	m <sub>L</sub>	m <sub>H</sub>
Hex	1B	28	56	n <sub>L</sub>	n <sub>H</sub>	m <sub>L</sub>	m <sub>H</sub>
Decimal	27	40	86	n <sub>L</sub>	n <sub>H</sub>	m <sub>L</sub>	m <sub>H</sub>

**Parameter range**

n<sub>L</sub> = 2, n<sub>H</sub> = 0

0 ≤ m<sub>L</sub> ≤ 255, 0 ≤ m<sub>H</sub> ≤ 127

**Function**

Moves the vertical print position to the position specified by the following formula:

(vertical position) = ((m<sub>H</sub> × 256) + m<sub>L</sub>) × (defined unit) + (top-margin position)

$$m_H = \text{INT} \left( \frac{((\text{vertical position}) - (\text{top-margin position})) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

$$m_L = \text{MOD} \left( \frac{((\text{vertical position}) - (\text{top-margin position})) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

**Notes**

- This command is available only on printers featuring ESC/P 2.
- Set the defined unit using the ESC ( U command.
- The default defined unit for this command is 1/360 inch.
- The new position is measured in defined units from the current top-margin position.
- Moving the print position below the bottom-margin position produces the following results:
 

Continuous paper	Moves the vertical print position to the top-margin position on the next page
Single-sheet paper	Ejects the paper
- The printer ignores this command under the following conditions:
  - The command would move the print position more than 179/360 inch in the negative direction
  - The command would move the print position in the negative direction after a graphics command is sent on the current line, or above the point where graphics have previously been printed

*Printers not featuring this command*

All non-ESC/P 2 printers

*Model-dependent variations*

None

*Related topics*

CR, LF, FF, VT, ESC B, ESC ( U, Moving the vertical position

**Format**

ASCII	ESC	(	v	n <sub>L</sub>	n <sub>H</sub>	m <sub>L</sub>	m <sub>H</sub>
Hex	1B	28	76	n <sub>L</sub>	n <sub>H</sub>	m <sub>L</sub>	m <sub>H</sub>
Decimal	27	40	118	n <sub>L</sub>	n <sub>H</sub>	m <sub>L</sub>	m <sub>H</sub>

**Parameter range**

$$n_L = 2, n_H = 0$$

$$0 \leq m_L \leq 255, 0 \leq m_H \leq 127$$

**Function**

Moves the vertical print position up or down from the current position, as specified by the following formula:

$$(\text{horizontal position}) = ((m_H \times 256) + m_L) \times (\text{defined unit}) + (\text{current position})$$

For positive (down) movement:

$$m_H = \text{INT} \left( \frac{((\text{vertical position}) - (\text{current position})) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

$$m_L = \text{MOD} \left( \frac{((\text{vertical position}) - (\text{current position})) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

For negative (up) movement:

$$m_H = 32768 - \text{INT} \left( \frac{((\text{current position}) - (\text{vertical position})) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

$$m_L = 32768 - \text{MOD} \left( \frac{((\text{current position}) - (\text{vertical position})) \times \frac{1}{(\text{defined unit})}}{256} \right)$$

**Notes**

- This command is available only on printers featuring ESC/P 2.
- Set the defined unit using the ESC ( U command.
- The default defined unit for this command is 1/360 inch.
- The new position is measured in defined units from the current position.

- Moving the print position below the bottom-margin position produces the following results:
  - Continuous paper    Moves the vertical print position to the top-margin position on the next page
  - Single-sheet paper    Ejects the paper
- The printer ignores this command under the following conditions:
  - The command would move the print position more than 179/360 inch in the negative direction.
  - The command would move the print position in the negative direction after a graphics command is sent on the current line, or above the point where graphics have previously been printed.
  - The command would move the print position above the top-margin position.

*Printers not featuring this command*

All non-ESC/P 2 printers

*Model-dependent variations*

None

*Related topics*

CR, LF, FF, VT, ESC ( U, ESC B, Moving the vertical position

**Format**

ASCII	ESC	J	n
Hex	1B	4A	n
Decimal	27	74	n

**Parameter range** $0 \leq n \leq 255$ **Function**

Advances the vertical print position  $n/180$  inch

**Notes**

- ESC J does not affect the horizontal print position.
- Moving the print position below the bottom-margin position produces the following results:

Continuous paper	Moves the vertical print position to the top-margin position on the next page
Single-sheet paper	Ejects the paper

**Printers not featuring this command**

None

**Model-dependent variations**

On non-ESC/P 2 printers:

- Prints all data in the line buffer
- Advances paper to the top-of-form position on the next page if the ESC J command moves the print position below the bottom-margin position set with the ESC N command
- Ejects single-sheet paper if the ESC J command moves the print position beyond the end of the printable area (and paper was loaded by cut-sheet feeder)
- Ejects single-sheet paper and advances the next single sheet the remaining distance if the ESC J command moves the print position beyond the end of the printable area (and paper was loaded manually)

**Related topics**

CR, LF, FF, VT, ESC ( U, ESC B, ESC ( V, ESC ( v, Moving the vertical position

**Format**

ASCII	ESC	J	n
Hex	1B	4A	n
Decimal	27	74	n

**Parameter range**

0 ≤ n ≤ 255

**Function**

- Prints data in buffer
- Advances the vertical print position n/216 inch

**Notes**

- ESC J does not affect the horizontal print position.
- If the ESC J command moves the print position on continuous paper below the bottom-margin position set with the ESC N command, the printer advances to the top-of-form position on the next page.
- If ESC J moves the print position on single-sheet paper below the end of the printable area, the printer ejects the paper (if loaded by cut-sheet feeder) or ejects paper and then feeds next sheet remaining distance (if loaded manually).

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

CR, LF, FF, VT, ESC B, Moving the vertical position

*Format*

ASCII	HT
Hex	09
Decimal	9

*Function*

Moves the horizontal print position to the next tab to the right of the current print position

*Notes*

- 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.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC D, ESC \$, ESC \, ESC l, ESC Q, CR, Moving the horizontal position

*Format*

ASCII	HT
Hex	09
Decimal	9

*Function*

Moves the horizontal print position to the next tab to the right of the current print position

*Notes*

- 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.
- Underlines are not printed between the current print position and the next tab when this command is sent.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC D, ESC \$, ESC \, CR, ESC I, ESC Q, Moving the horizontal position

**Format**

ASCII	VT
Hex	0B
Decimal	11

**Function**

- Moves the vertical print position to the next vertical tab below the current print position
- Moves the horizontal print position to the left-margin position

**Notes**

- 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 (moves the horizontal print position to the left-margin position) if all tabs have been canceled with the ESC B NUL command.
- The VT command functions the same as an LF command (advances one line in the current line spacing and moves the horizontal print position to the left-margin position) if no tabs have been set since the printer was turned on or was reset with the ESC @ command.
- The VT command functions the same as an FF command (advances to the top-margin position on the next page) if some tabs have been set, but no tab is set between the current print position and the bottom-margin position.
- This command cancels double-width printing set with the SO or ESC SO command.

**Printers not featuring this command**

None

**Model-dependent variations**

On non-ESC/P 2 printers:

- The printer advances to the top-of-form position on the next page if the next tab is beyond the currently set page length.
- The printer ignores a VT command that would move the print position inside the bottom margin.

**Related topics**

ESC ( V, ESC ( v, ESC B, CR, LF, FF, Moving the vertical position

**Format**

ASCII	VT
Hex	0B
Decimal	11

**Function**

- Moves the vertical print position to the next vertical tab below the current print position
- Moves the horizontal print position to the left-margin position

**Notes**

- The printer advances to the top-of-form position on the following page if the next tab is beyond the currently set page length, or beyond the bottom-margin position.
- The VT command functions the same as a CR command (moves the horizontal print position to the left-margin position) if all tabs have been canceled with the ESC B NUL command.
- The VT command functions the same as an LF command (advances one line in the current line spacing and moves the horizontal print position to the left-margin position) 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.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC B, CR, LF, FF, Moving the vertical print position

**Format**

ASCII	ESC	f	m	n
Hex	1B	66	m	n
Decimal	27	102	m	n

**Parameter range** $0 \leq n \leq 127$  $m = 0, 1$ **Function**

Moves the print position depending on the value of m, as follows:

- m = 0      Prints n spaces in the current pitch.
- 1          Performs n line feeds, in the current line spacing  
            Moves the horizontal print position to the left-margin position.

**Notes**

- This is a nonrecommended command.
- Underline is performed between the current and final print positions when this command is used to move the print position horizontally (m = 0).
- Using this command to move the print position vertically (m = 1) cancels double-width printing selected with the SO or ESC SO command.

**Printers not featuring this command**

ActionPrinter T-750, ActionPrinter 2500, DFX-5000+, DFX-5000, DFX-8000, FX-850, FX-1050

**Model-dependent variations**

None

**Related topics**

HT, VT, LF, ESC \$, ESC \, Moving the vertical position

**Format**

ASCII	BS
Hex	08
Decimal	8

**Function**

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

**Notes**

- This is a nonrecommended command.
- The printer ignores this command if it would move the print position to the left of the left margin.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC \$, ESC \, HT, DEL, Moving the horizontal position

**Format**

ASCII	BS
Hex	08
Decimal	8

**Function**

Moves the print position to the left a distance equal to one character in the current pitch plus any additional intercharacter space

**Notes**

- This is a nonrecommended command.
- The printer ignores this command if it would move the print position to the left of the left margin.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC \$, ESC \, HT, CR, Moving the horizontal position

**Format**

ASCII	ESC	(	U	n <sub>L</sub>	n <sub>H</sub>	m
Hex	1B	28	55	n <sub>L</sub>	n <sub>H</sub>	m
Decimal	27	40	85	n <sub>L</sub>	n <sub>H</sub>	m

**Parameter range**

n<sub>L</sub> = 1, n<sub>H</sub> = 0

m = 5, 10, 20, 30, 40, 50, 60

**Function**

Sets the unit to m/3600 inch. The printer uses this unit when moving the print position, setting the page length, and setting the top and bottom margins with the following commands: ESC ( V, ESC ( v, ESC \, ESC \$, ESC ( C, ESC ( c, **<MOVX>**, and **<MOVY>**.

**Default**

The default unit varies depending on the command and print quality, as follows:

ESC ( V	1/360 inch
ESC ( v	1/360 inch
ESC ( C	1/360 inch
ESC ( c	1/360 inch
ESC \ (LQ mode)	1/180 inch
ESC \ (draft mode)	1/120 inch
ESC \$	1/60 inch
<b>&lt;MOVX&gt;</b> (dot)	1/360 inch
<b>&lt;MOVY&gt;</b>	1/360 inch

**Notes**

- This command is available only on printers featuring ESC/P 2.
- The parameter and related commands highlighted in bold are new to this command and only apply to the Stylus COLOR and later inkjet printer models.

**Printers not featuring this command**

All non-ESC/P 2 printers

**Model-dependent variations**

None

**Related topics**

HT, VT, CR, LF, FF, Set the Printing Area, Select the print position, Graphics mode

*Format*

ASCII	ESC	0
Hex	1B	30
Decimal	27	48

*Function*

Sets the line spacing to 1/8 inch

*Default*

1/6-inch line spacing

*Notes*

- Changing the line spacing does not affect previous settings for vertical tabs or page length.
- This command uses the ASCII code for the character 0 (zero), not a capital O or the number 0.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC 2, ESC 3, ESC +, ESC C, ESC N, ESC B, LF, Setting page length, Moving the vertical position

**Format**

ASCII	ESC	0
Hex	1B	30
Decimal	27	48

**Function**

Sets the line spacing to 1/8 inch

**Default**

1/6-inch line spacing

**Notes**

- Changing the line spacing does not affect previous settings for vertical tabs or page length.
- This command uses the ASCII code for the character 0 (zero), not the number 0.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC 2, ESC 3, ESC N, ESC C, ESC B, LF, Setting page length, Moving the vertical position

**Format**

ASCII	ESC	2
Hex	1B	32
Decimal	27	50

**Function**

Sets the line spacing to 1/6 inch

**Default**

1/6-inch line spacing

**Notes**

- This command uses the ASCII code for the character 2, not the number 2.
- Changing the line spacing does not affect previous settings for vertical tabs or page length.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC 0, ESC 3, ESC +, ESC C, ESC N, ESC B, LF, Setting page length, Moving the vertical position

*Format*

ASCII	ESC	2
Hex	1B	32
Decimal	27	50

*Function*

Sets the line spacing to 1/6 inch

*Default*

1/6-inch line spacing

*Notes*

- This command uses the ASCII code for the character 2, not the number 2.
- Changing the line spacing does not affect previous settings for vertical tabs or page length.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC 0, ESC 3, ESC N, ESC C, ESC B, LF, Setting page length, Moving the vertical position

**Format**

ASCII	ESC	3	n
Hex	1B	33	n
Decimal	27	51	n

**Parameter range**

$0 \leq n \leq 255$

**Function**

Sets the line spacing to n/180 inch

**Default**

1/6-inch line spacing

**Notes**

- This command uses the ASCII code for the character 3, not the number 3.
- Changing the line spacing does not affect previous settings for vertical tabs or page length.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC 0, ESC 2, ESC +, ESC N, ESC C, ESC B, LF, Setting page length, Moving the vertical position

**Format**

ASCII	ESC	3	n
Hex	1B	33	n
Decimal	27	51	n

**Parameter range**

0 ≤ n ≤ 255

**Function**

Sets the line spacing to n/216 inch

**Default**

1/6-inch line spacing

**Notes**

- This command uses the ASCII code for the character 3, not the number 3.
- Changing the line spacing does not affect previous settings for vertical tabs or page length.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC 0, ESC 2, ESC N, ESC C, ESC B, LF, Setting page length, Moving the vertical position

**Format**

ASCII	ESC	+	n
Hex	1B	2B	n
Decimal	27	43	n

**Parameter range**

0 ≤ n ≤ 255

**Function**

Sets the line spacing to n/360 inch

**Default**

1/6-inch line spacing

**Notes**

- Changing the line spacing does not affect previous settings for vertical tabs or page length.
- This command is available only on 24/48-pin printers.
- This is the recommended command for setting line spacing.

**Printers not featuring this command**

ActionPrinter L-1000, ActionPrinter 3000, LQ-200, LQ-400, LQ-500

**Model-dependent variations**

None

**Related topics**

ESC 0, ESC 2, ESC 3, ESC N, ESC C, ESC B, LF, Setting page length, Moving the vertical position

**Format**

ASCII	ESC	A	n
Hex	1B	41	n
Decimal	27	65	n

**Parameter range** $0 \leq n \leq 85$ **Function**

Sets the line spacing to n/60 inch

**Default**

1/6-inch line spacing

**Notes**

- This is a nonrecommended command; use the ESC + or ESC 3 command instead.
- Changing the line spacing does not affect previous settings for vertical tabs or page length.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC +, ESC 0, ESC 2, ESC 3, ESC N, ESC C, ESC B, LF, Setting page length, Moving the vertical position

**Format**

ASCII	ESC	A	n
Hex	1B	41	n
Decimal	27	65	n

**Parameter range**

$0 \leq n \leq 85$

**Function**

Sets the line spacing to n/72 inch

**Default**

1/6-inch line spacing

**Notes**

- This is a nonrecommended command; use the ESC 3 command instead.
- Changing the line spacing does not affect previous settings for vertical tabs or page length.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC 0, ESC 2, ESC 3, ESC N, ESC C, ESC B, LF, Setting page length, Moving the vertical position

*Format*

ASCII	ESC	1
Hex	1B	31
Decimal	27	49

*Function*

Sets the line spacing to 7/72 inch

*Default*

1/6-inch line spacing

*Notes*

- This is a nonrecommended command; use the ESC 3 command instead.
- This command is available only on 9-pin printers.
- This command uses the ASCII code for the character 1, not the number 1.
- Changing the line spacing does not affect previous settings for vertical tabs or page length.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC 0, ESC 2, ESC 3, ESC N, ESC C, ESC B, LF, Setting page length, Moving the vertical position

**Format**

ASCII	ESC	D	n <sub>1</sub>	n <sub>2</sub>	...	n <sub>k</sub>	NUL
Hex	1B	44	n <sub>1</sub>	n <sub>2</sub>	...	n <sub>k</sub>	00
Decimal	27	68	n <sub>1</sub>	n <sub>2</sub>	...	n <sub>k</sub>	0

**Parameter range**

$$0 \leq k \leq 32$$

$$1 \leq n \leq 255$$

$$n_k > n_{(k-1)}$$

**Function**

Sets horizontal tab positions (in the current character pitch) at the columns specified by n<sub>1</sub> to n<sub>k</sub>, as measured from the left-margin position

**Default**

Every eight characters

**Notes**

- The values for n must be in ascending order; a value of n less than the previous n ends tab setting (like the NUL code).
- Changing the character pitch does not affect current tab settings.
- Send an ESC D NUL command to cancel all tab settings.
- The tab settings move to match any movement in the left margin.
- A maximum of 32 horizontal tabs can be set.
- 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.
- The printer calculates tab positions based on 10 cpi if proportional spacing is selected with the ESC p command.
- Sending the ESC D command clears any previous tab settings.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC \$, ESC \, ESC P, ESC M, ESC p, ESC l, ESC Q, Setting the left and right margins, Moving the horizontal position

**Format**

ASCII	ESC	D	n <sub>1</sub>	n <sub>2</sub>	...	n <sub>k</sub>	NUL
Hex	1B	44	n <sub>1</sub>	n <sub>2</sub>	...	n <sub>k</sub>	00
Decimal	27	68	n <sub>1</sub>	n <sub>2</sub>	...	n <sub>k</sub>	0

**Parameter range**

$$0 \leq k \leq 32$$

$$1 \leq n \leq 255$$

$$n_k > n_{(k-1)}$$

**Function**

Sets horizontal tab positions (in the current character pitch) at the columns specified by n<sub>1</sub> to n<sub>k</sub>, as measured from the left-margin position

**Default**

Every eight characters

**Notes**

- The values for n must be in ascending order; a value of n less than the previous n ends tab setting (like the NUL code).
- Changing the character pitch does not affect current tab settings.
- Send an ESC D NUL command to cancel all tab settings.
- The tab settings move to match any movement in the left margin.
- A maximum of 32 horizontal tabs can be set.
- 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.
- The printer calculates tab positions based on 10 cpi if proportional spacing is selected with the ESC p command.
- Sending the ESC D command clears any previous tab settings.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC \$, ESC \, ESC P, ESC M, ESC p, ESC l, ESC Q, Setting the left and right margins, Moving the horizontal position

**Format**

ASCII	ESC	B	n <sub>1</sub>	n <sub>2</sub>	...	n <sub>k</sub>	NUL
Hex	1B	42	n <sub>1</sub>	n <sub>2</sub>	...	n <sub>k</sub>	00
Decimal	27	66	n <sub>1</sub>	n <sub>2</sub>	...	n <sub>k</sub>	0

**Parameter range**

$$0 \leq k \leq 16$$

$$1 \leq n \leq 255$$

$$n_k > n_{(k-1)}$$

**Function**

Sets vertical tab positions (in the current line spacing) at the lines specified by n<sub>1</sub> to n<sub>k</sub>, as measured from the top-margin position

**Notes**

- The values for n must be in ascending order; a value of n less than the previous n ends tab setting (just like the NUL code).
- Changing the line spacing does not affect previous tab settings.
- The tab settings move to match any subsequent movement in the top-margin position.
- Send an ESC B NUL command to cancel all tab settings.
- A maximum of 16 vertical tabs can be set.
- The printer stores all tab settings, even if outside the printing area; if you increase the page length to include previously set tabs, you can move to those positions with the VT (tab vertically) command.
- Sending the ESC B command clears any previous tab settings.

**Printers not featuring this command**

None

**Model-dependent variations**

On non-ESC/P 2 printers:

- Vertical tabs are measured from the top-of-form position.
- Setting vertical tabs with ESC B is the same as setting the vertical tabs in VFU channel 0.

**Related topics**

ESC ( V, ESC ( v, ESC J, ESC ( C, ESC ( C, ESC ( c, ESC C, ESC N, ESC 0, ESC 2, ESC 3, ESC +, Setting page length, Setting top and bottom margins, Moving the vertical position

**Format**

ASCII	ESC	B	n <sub>1</sub>	n <sub>2</sub>	...	n <sub>k</sub>	NUL
Hex	1B	42	n <sub>1</sub>	n <sub>2</sub>	...	n <sub>k</sub>	00
Decimal	27	66	n <sub>1</sub>	n <sub>2</sub>	...	n <sub>k</sub>	0

**Parameter range**

$$0 \leq k \leq 16$$

$$1 \leq n \leq 255$$

$$n_k > n_{(k-1)}$$

**Function**

Sets vertical tab positions (in the current line spacing) at the lines specified by n<sub>1</sub> to n<sub>k</sub>, as measured from the top-of-form position

**Notes**

- The values for n must be in ascending order; a value of n less than the previous n ends tab setting (like the NUL code).
- Changing the line spacing does not affect previous tab settings.
- Send an ESC B NUL command to cancel all tab settings.
- A maximum of 16 vertical tabs can be set.
- The printer stores all tab settings, even if outside the printing area; if you increase the page length to include previously set tabs, you can move to those positions with the VT (tab vertically) command.
- Sending the ESC B command clears any previous tab settings.
- Setting vertical tabs with ESC B is the same as setting the vertical tabs in VFU channel 0.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC J, ESC C, ESC N, ESC 0, ESC 2, ESC 3, Setting page length, Setting bottom margin, Moving the vertical position

**Format**

ASCII	ESC	b	m	n <sub>1</sub>	...	n <sub>k</sub>	NUL
Hex	1B	62	m	n <sub>1</sub>	...	n <sub>k</sub>	00
Decimal	27	98	m	n <sub>1</sub>	...	n <sub>k</sub>	0

**Parameter range**

$$0 \leq m \leq 7$$

$$1 \leq n \leq 255$$

$$n_k > n_{(k-1)}$$

$$1 \leq k \leq 16$$

**Function**

Sets vertical tab positions at the lines specified by n<sub>1</sub> to n<sub>k</sub> (in the current line spacing) in tab set m, as measured from the top-of-form position

**Notes**

- This is a nonrecommended command.
- This command is deleted in ESC/P 2.
- Up to eight sets of tabs can be set.
- The value for m specifies the number of the tab set being changed; these sets of tabs are called vertical formatting unit (VFU) channels.
- The values for n must be in ascending order; a value of n less than the previous n ends tab setting (just like the NUL code).
- Send the ESC / command to select a VFU channel other than channel 0; the VT (tab vertically) command then uses the settings for the selected channel.
- Changing the line spacing does not affect previous tab settings.
- Sending the ESC b command clears any previous tab settings in that tab set.
- Send an ESC b m NUL command to cancel all tab settings in tab set m.
- A maximum of 16 vertical tabs can be set in each VFU channel.
- The printer stores all tab settings, even if outside the printing area; if you increase the page length to include previously set tabs, you can move to those positions with the VT (tab vertically) command.

**Printers not featuring this command**

All ESC/P 2 printers, ActionPrinter 3000, LQ-200

**Model-dependent variations**

None

**Related topics**

ESC \, VT, ESC 0, ESC 2, ESC 3, ESC +, Setting page length, Setting bottom margin, Moving the vertical position

**Format**

ASCII	ESC	b	m	n <sub>1</sub>	...	n <sub>k</sub>	NUL
Hex	1B	62	m	n <sub>1</sub>	...	n <sub>k</sub>	00
Decimal	27	98	m	n <sub>1</sub>	...	n <sub>k</sub>	0

**Parameter range**

$$0 \leq m \leq 7$$

$$1 \leq n \leq 255$$

$$n_k > n_{(k-1)}$$

$$1 \leq k \leq 16$$

**Function**

Sets vertical tab positions at the lines specified by n<sub>1</sub> to n<sub>k</sub> (in the current line spacing) in tab set m, as measured from the top-of-form position

**Notes**

- This is a nonrecommended command.
- Up to eight sets of tabs can be set.
- The value for m specifies the number of the tab set being changed; these sets of tabs are called vertical formatting unit (VFU) channels.
- The values for n must be in ascending order; a value of n less than the previous n ends tab setting (like the NUL code).
- Send the ESC / command to select a VFU channel other than channel 0; the VT (tab vertically) command then uses the settings for the selected channel.
- Changing the line spacing does not affect previous tab settings.
- Sending the ESC b command clears any previous tab settings in that tab set.
- Send an ESC b m NUL command to cancel all tab settings in tab set m.
- A maximum of 16 vertical tabs can be set in each VFU channel.
- The printer stores all tab settings, even if outside the printing area; if you increase the page length to include previously set tabs, you can move to those positions with the VT (tab vertically) command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC /, VT, ESC 0, ESC 2, ESC 3, Setting page length, Setting bottom margin, Moving the vertical position

**Format**

ASCII	ESC	/	m
Hex	1B	2F	m
Decimal	27	47	m

**Parameter range**

$$0 \leq m \leq 7$$

**Function**

Selects vertical tab set m

**Default**

Tab channel 0

**Notes**

- This is a nonrecommended command.
- This command is deleted in ESC/P 2.
- The value for m specifies the number of the tab set being changed; these sets of tabs are called vertical formatting unit (VFU) channels.
- You must use this command to select a tab set (VFU channel) other than set 0; the VT (tab vertically) command then uses the settings for the selected channel.
- You can select from eight sets of tabs (VFU channels).

**Printers not featuring this command**

All ESC/P 2 printers, ActionPrinter 3000, LQ-200

**Model-dependent variations**

None

**Related topics**

ESC b, ESC B, VT, Moving the vertical position

*Format*

ASCII	ESC	/	m
Hex	1B	2F	m
Decimal	27	47	m

*Parameter range*

$$0 \leq m \leq 7$$

*Function*

Selects vertical tab set m

*Default*

Tab channel 0

*Notes*

- This is a nonrecommended command.
- The value for m specifies the number of the tab set being changed; these sets of tabs are called vertical formatting unit (VFU) channels.
- You must use this command to select a tab set (VFU channel) other than set 0; the VT (tab vertically) command then uses the settings for the selected channel.
- You can select from eight sets of tabs (VFU channels).

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC b, ESC B, VT, Moving the vertical position

**Format**

ASCII	ESC	e	m	n
Hex	1B	65	m	n
Decimal	27	101	m	n

**Parameter range**

m = 0, 1

horizontal tabs (m=0)

0 ≤ n ≤ 21      10 cpi

0 ≤ n ≤ 25      12 cpi

0 ≤ n ≤ 36      Condensed printing

vertical tabs (m=1)

0 ≤ n ≤ 127

(line spacing) × n < (page length)

**Function**

Sets fixed tabs, as follows:

- |       |   |
|-------|---|
| m = 0 | Sets vertical tabs every n lines in the current line spacing, as measured from the top-of-form position |
| 1     | Sets horizontal tabs every n characters in the current character pitch                                  |

**Default**

Horizontal tabs:    Every eight characters

Vertical tabs:      None

**Notes**

- This is a nonrecommended command.
- Use the VT command to move to the next vertical tab or the HT command to move to the next horizontal tab.
- The ESC e command clears previously set tabs.
- The printer ignores this command if the value for n would make the vertical tab increment longer than the current page length, or if n is greater than the maximum for the current character pitch.

*Printers not featuring this command*

DFX-5000+, DFX-5000, DFX-8000, FX-850, FX-1050

*Model-dependent variations*

None

*Related topics*

VT, HT, ESC B, ESC D, ESC P, ESC M, SO, ESC 0, ESC 2, ESC 3, Moving the horizontal position, Moving the vertical position

**Format**

ASCII	ESC	a	n
Hex	1B	61	n
Decimal	27	97	n

**Parameter range**

$$0 \leq n \leq 3$$

**Function**

Selects from four types of justification, as follows:

n = 0 or 48	Flush left
1 or 49	Centered
2 or 50	Flush right
3 or 51	Full justification (flush right and left)

**Default**

Flush left

**Notes**

- This is a nonrecommended command.
- This command has been deleted in ESC/P 2 printers.
- Always set justification at the beginning of a line.
- The printer performs full justification only if the width of the current line is greater than 75% of the printing area width. If the line width is less than 75%, the printer left-justifies text.
- You should not use commands that adjust the horizontal print position during full justification. These commands are: DEL, HT, BS, ESC f 0, ESC \$, and ESC \.
- Justification is based on the font selected when the justification command is sent. Changing the font after setting justification can cause unpredictable results.

**Printers not featuring this command**

All ESC/P 2 printers, ActionPrinter 3000, LQ-200

**Model-dependent variations**

None

**Related topics**

ESC P, ESC M, ESC g, SO, ESC SP, ESC \$, ESC \, Moving the horizontal position, Selecting the pitch

**Format**

ASCII	ESC	a	n
Hex	1B	61	n
Decimal	27	97	n

**Parameter range** $0 \leq n \leq 3, 48 \leq n \leq 51$ **Function**

Selects from four types of justification, as follows:

n = 0 or 48	Flush left
1 or 49	Centered
2 or 50	Flush right
3 or 51	Full justification (flush right and left)

**Default**

Flush left

**Notes**

- This is a nonrecommended command.
- Always set justification at the beginning of a line.
- The printer performs full justification only if the width of the current line is greater than 75% of the printing area width. If the line width is less than 75%, the printer left-justifies text.
- You should not use commands that adjust the horizontal print position during full justification. These commands are: DEL, HT, BS, ESC f 0, ESC \$, and ESC \.
- Justification is based on the font selected when the justification command is sent. Changing the font after setting justification can cause unpredictable results.

**Printers not featuring this command**

None

**Model-dependent variations**

ActionPrinter Apex 80, ActionPrinter T-1000, ActionPrinter 2250, LX-100, LX-300, LX-800, LX-810. Justification is available only in LQ mode.

**Related topics**

ESC P, ESC M, SO, ESC SP, ESC \$, ESC \, Moving the horizontal position, Selecting the pitch

**Format**

ASCII	ESC	(	t	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>
Hex	1B	28	74	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>
Decimal	27	40	116	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>

**Parameter range**

$n_L = 3, n_H = 0$

$0 \leq d_1 \leq 3, 48 \leq d_1 \leq 51$

$0 \leq d_2 \leq 255$

$0 \leq d_3 \leq 255$

**Function**

Assigns the d<sub>2</sub> registered character table to the d<sub>1</sub> character table according to the following values (the d<sub>1</sub> character table is one of the four tables selectable with the ESC t command):

d <sub>2</sub>	d <sub>3</sub>	Table name
0	0	Italic
1	0	PC437 (US)
1	16	PC437 Greek
2	0	PC932 (Japanese)
3	0	PC850 (Multilingual)
4	0	PC851 (Greek)
5	0	PC853 (Turkish)
6	0	PC855 (Cyrillic)
7	0	PC860 (Portugal)
8	0	PC863 (Canada-French)
9	0	PC865 (Norway)
10	0	PC852 (East Europe)
11	0	PC857 (Turkish)
12	0	PC862 (Hebrew)
13	0	PC864 (Arabic)
13	32	PC AR864
14	0	PC866 (Russian)
14	16	(Bulgarian ASCII****)
14	32	PC866 LAT. (Latvian)
15	0	PC869 (Greek)
16	0	USSR GOST (Russian)
17	0	ECMA-94-1
18	0	KU42 (K.U. Thai)
19	0	TIS11 (TS 988 Thai)
20	0	TIS18 (GENERAL Thai)
21	0	TIS17 (SIC STD. Thai)
22	0	TIS13 (IBM STD. Thai)
23	0	TIS16 (SIC OLD Thai)
24	0	PC861 (Iceland)
25	0	BRASCII

d <sub>2</sub>	d <sub>3</sub>	Table name
26	0	Abicomp
27	0	MAZOWIA (Poland)
28	0	Code MJK (CSFR)
29	7	ISO8859-7 (Latin/Greek)
29	16	ISO8859-1 (Latin 1)
30	0	TSM/WIN (Thai system manager)
31	0	ISO Latin 1T (Turkish)
32	0	Bulgaria
33	0	Hebrew 7
34	0	Hebrew 8
35	0	Roman 8
36	0	PC774 (Lithuania)
37	0	Estonia (Estonia)
38	0	ISCII
39	0	PC-ISCII
40	0	PC APTEC
41	0	PC708
42	0	PC720
112	0	OCR-B
127	1	ISO Latin 1
127	2	ISO 8859-2 (ISO Latin 2)
127	7	ISO Latin 7 (Greek)

***Printers not featuring this command***

All non-ESC/P 2 printers

***Model-dependent variations***

Not all models feature all character tables. See the Command Table section for the character tables available on each printer model.

***Related topics***

ESC t, Assign character tables, Selecting the character table

**Format**

ASCII	ESC	(	t	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>
Hex	1B	28	74	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>
Decimal	27	40	116	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>

**Parameter range**

- n<sub>L</sub> = 3, n<sub>H</sub> = 0
- 0 ≤ d<sub>1</sub> ≤ 1, 48 ≤ d<sub>1</sub> ≤ 49
- 0 ≤ d<sub>2</sub> ≤ 255
- 0 ≤ d<sub>3</sub> ≤ 255

**Function**

Assigns the d<sub>2</sub> registered character table to the d<sub>1</sub> character table according to the following values (the d<sub>1</sub> character table is one of the four tables selectable with the ESC t command):

d <sub>2</sub>	d <sub>3</sub>	Table name
0	0	Italic
1	0	PC437 (US)
1	16	PC437 Greek
2	0	PC932 (Japanese)
3	0	PC850 (Multilingual)
4	0	PC851 (Greek)
5	0	PC853 (Turkish)
6	0	PC855 (Cyrillic)
7	0	PC860 (Portugal)
8	0	PC863 (Canada-French)
9	0	PC865 (Norway)
10	0	PC852 (East Europe)
11	0	PC857 (Turkish)
12	0	PC862 (Hebrew)
13	0	PC864 (Arabic)
13	32	PC AR864
14	0	PC866 (Russian)
14	16	(Bulgarian ASCII****)
14	32	PC866 LAT. (Latvian)
15	0	PC869 (Greek)
16	0	USSR GOST (Russian)
17	0	ECMA-94-1
18	0	KU42 (K.U. Thai)
19	0	TIS11 (TS 988 Thai)
20	0	TIS18 (GENERAL Thai)
21	0	TIS17 (SIC STD. Thai)
22	0	TIS13 (IBM STD. Thai)
23	0	TIS16 (SIC OLD Thai)
24	0	PC861 (Iceland)
25	0	BRASCII

d <sub>2</sub>	d <sub>3</sub>	Table name
26	0	Abicomp
27	0	MAZOWIA (Poland)
28	0	Code MJK (CSFR)
29	7	ISO8859-7 (Latin/Greek)
29	16	ISO8859-1 (Latin 1)
30	0	TSM/WIN (Thai system manager)
31	0	ISO Latin 1T (Turkish)
32	0	Bulgaria
33	0	Hebrew 7
34	0	Hebrew 8
35	0	Roman 8
36	0	PC774 (Lithuania)
37	0	Estonia (Estonia)
38	0	ISCII
39	0	PC-ISCII
40	0	PC APTEC
41	0	PC708
42	0	PC720
112	0	OCR-B
127	1	ISO Latin 1
127	2	ISO 8859-2 (ISO Latin 2)
127	7	ISO Latin 7 (Greek)

### *Printers not featuring this command*

ActionPrinter T-750, ActionPrinter T-1000, ActionPrinter Apex80, ActionPrinter 2000, ActionPrinter 2500, DFX-5000, DFX-8000, FX-850, FX-1050, LX-400, LX-800, LX-810, LX-850, LX-1050

### *Model-dependent variations*

Not all models feature all character tables. See the Command Table section for the character tables available on each printer model.

### *Related topics*

ESC t, Assign character tables, Selecting the character table

**Format**

ASCII	ESC	t	n
Hex	1B	74	n
Decimal	27	116	n

**Parameter range**

$0 \leq n \leq 3, 48 \leq n \leq 51$

**Function**

Selects the character table to be used for printing from among the four character tables described below:

n = 0 or 48	Character table 0
1 or 49	Character table 1
2 or 50	Character table 2
3 or 51	Character table 3

**Default**

table 0	Italic
table 1	PC437
table 2	User-defined characters
table 3	PC437

**Notes**

- Use the ESC ( t command to assign any registered character table to any character table.
- To copy user-defined characters (that have been created with the ESC & or ESC : commands) to the upper half of the character table, send the ESC % 0 command, followed by the ESC t 2 command. However, you cannot copy user-defined characters using ESC t 2 if you have previously assigned another character table to table 2 using the ESC ( t command.

**Printers not featuring this command**

None

### *Model-dependent variations*

On non-ESC/P 2 printers:

- Selects the character table to be used for printing from between the two below:
  - n = 0     Italic character table
  - 1     Graphic character table
- When n = 2, this command copies the user-defined characters from positions 0 to 127 to positions 128 to 255.

### *Related topics*

ESC ( t, Selecting the character table, Assign character tables, Switching to RAM character printing

**Format**

ASCII	ESC	t	n
Hex	1B	74	n
Decimal	27	116	n

**Parameter range**

n = 0, 1, 48, 49

**Function**

Selects from between the two character sets described below:

n = 0 or 48	Character table 0
1 or 49	Character table 1

**Default**

table 0	Italic
table 1	PC437 (US)

**Notes**

Use the ESC ( t command to assign any registered character table to any character table.

**Printers not featuring this command**

None

**Model-dependent variations**

ActionPrinter T-750, ActionPrinter T-1000, ActionPrinter Apex 80, ActionPrinter 2000, ActionPrinter 2500, DFX-5000, DFX-8000, FX-850, FX-1050, LX-400, LX-800, LX-810, LX-850, LX-1050

Selects from between only the two character sets described below:

n = 0 or 48	Italic character table
1 or 49	Graphic character table

**Related topics**

ESC ( +, Selecting the character table

**Format**

ASCII	ESC	R	n
Hex	1B	52	n
Decimal	27	82	n

**Parameter range** $0 \leq n \leq 13, n = 64$ **Function**

Selects the set of characters printed for specific character codes, as listed below:

n = 0	USA
1	France
2	Germany
3	United Kingdom
4	Denmark I
5	Sweden
6	Italy
7	Spain I
8	Japan (English)
9	Norway
10	Denmark II
11	Spain II
12	Latin America
13	Korea
64	Legal

**Default**

Depends on DIP-switch or default mode setting

## Notes

The characters printed for each international character set are listed below:

n	Set name	Dec Hex	35 23	36 24	64 40	91 5B	92 5C	93 5D	94 5E	96 60	123 7B	124 7C	125 7D	126 7E
0	USA	#	\$	@	[	\	]	^	`	{		}	~	
1	France	#	\$	à	°	ç	§	^	`	é	ù	è	¨	
2	Germany	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß	
3	UK	£	\$	@	[	\	]	^	`	{		}	~	
4	Denmark I	#	\$	@	Æ	Ø	Å	^	`	æ	ø	å	~	
5	Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü	
6	Italy	#	\$	@	°	\	é	^	ù	à	ò	è	ì	
7	Spain I	Pt	\$	@	ı	Ñ	ı	^	`	¨	ñ	}	~	
8	Japan (Eng)	#	\$	@	[	¥	]	^	`	{		}	~	
9	Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü	
10	Denmark II	#	\$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü	
11	Spain II	#	\$	á	ı	Ñ	ı	é	`	ı	ñ	ó	ú	
12	Lat America	#	\$	á	ı	Ñ	ı	é	ü	ı	ñ	ó	ú	
13	Korea	#	\$	@	[	₩	]	^	`	{		}	~	
64	Legal	#	\$	§	°	'	"	¶	`	©	®	†	™	

### Printers not featuring this command

None

### Model-dependent variations

ActionPrinter L-1000, LQ-400, LQ-500. The Legal set (n=64) and Korea set (n=13) are not available.

### Related topics

Selecting an international character set

**Format**

ASCII	ESC	R	n
Hex	1B	52	n
Decimal	27	82	n

**Parameter range**

$$0 \leq n \leq 13$$

**Function**

Selects the set of characters printed for specific character codes, as listed below:

n = 0	USA
1	France
2	Germany
3	United Kingdom
4	Denmark I
5	Sweden
6	Italy
7	Spain I
8	Japan (English)
9	Norway
10	Denmark II
11	Spain II
12	Latin America

**Default**

Depends on DIP-switch or default mode setting

## Notes

The characters printed for each international character set are listed below:

n	Set name	Dec Hex	35 23	36 24	64 40	91 5B	92 5C	93 5D	94 5E	96 60	123 7B	124 7C	125 7D	126 7E
0	USA	#	\$	@	[	\	]	^	`	{		}	~	
1	France	#	\$	à	°	ç	§	^	`	é	ù	è	¨	
2	Germany	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß	
3	UK	£	\$	@	[	\	]	^	`	{		}	~	
4	Denmark I	#	\$	@	Æ	Ø	Å	^	`	æ	ø	å	~	
5	Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü	
6	Italy	#	\$	@	°	\	é	^	ù	à	ò	è	ì	
7	Spain I	Pt	\$	@	ı	Ñ	ı	^	`	¨	ñ	}	~	
8	Japan (Eng)	#	\$	@	[	¥	]	^	`	{		}	~	
9	Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü	
10	Denmark II	#	\$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü	
11	Spain II	#	\$	á	ı	Ñ	ı	é	`	ı	ñ	ó	ú	
12	Lat America	#	\$	á	ı	Ñ	ı	é	ü	ı	ñ	ó	ú	

### *Printers not featuring this command*

None

### *Model-dependent variations*

None

### *Related topics*

Selecting an international character set

**Format**

ASCII	ESC	&	NUL	n	m	[a <sub>0</sub>	a <sub>1</sub>	a <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub> ]
Hex	1B	26	00	n	m	[a <sub>0</sub>	a <sub>1</sub>	a <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub> ]
Decimal	27	38	0	n	m	[a <sub>0</sub>	a <sub>1</sub>	a <sub>2</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub> ]

**Parameter range**

$$0 \leq n \leq 127$$

$$0 \leq m \leq 127$$

$$n \leq m$$

**LQ mode**

$$0 \leq a_1 \leq 37$$

$$0 \leq a_0 + a_1 + a_2 \leq 42$$

**Draft mode**

$$0 \leq a_1 \leq 15$$

$$0 \leq a_0 + a_1 + a_2 \leq 18$$

**Normal characters**

$$k = 3 \times a_1$$

**Super/subscript characters**

$$k = 2 \times a_1$$

**Function**

Sets the parameters for user-defined characters and then sends the data for those characters, as described below:

n	Character code of the first character to be user-defined
m	Character code of the last character to be user-defined
a <sub>0</sub>	Space to the left of each proportional user-defined character
a <sub>1</sub>	Actual width of user-defined characters
a <sub>2</sub>	Space to the right of each proportional user-defined character
d <sub>1</sub> . . . d <sub>k</sub>	Character data

**Notes**

- The data within brackets in the Format section above is repeated for each character you define.
- Defining characters when the following attributes are set results in the user-defined characters having those attributes: superscript, subscript, proportional spacing, draft mode, and LQ mode.
- Always cancel italic characters with the ESC 5 command before defining characters. After defining user-defined characters, you can italicize them by sending the ESC 4 command.
- User-defined characters with differing attributes cannot exist at the same time. For example, if normal-size user-defined characters have already been defined, and you use this command to define subscript characters, the previous normal-size characters are lost.
- Do not define continuous horizontal dots on the same row; the printer ignores the second of two continuous dots.

- The following maximum character widths are recommended.

*(height · width)*

Print quality	10 cpi	12 cpi	15 cpi	Proportional
Draft Normal size	24 × 12	24 × 10	24 × 8	Not Available
Draft Super/subscript	16 × 12	16 × 10	16 × 8	Not Available
LQ Normal size	24 × 36	24 × 30	24 × 24	24 × 42
LQ Super/subscript	16 × 36	16 × 30	16 × 24	16 × 42

- Send the ESC % 1 command to switch to user-defined characters.
- Use the ESC ( ^ command to print characters between 0 and 32.
- Send the ESC % 0 command followed by the ESC t 2 command to copy current user-defined characters to the upper half of the character table. The lower half of the character table is then normal ROM characters.

### *Printers not featuring this command*

None

### *Model-dependent variations*

None

### *Related topics*

ESC %, ESC ( ^, ESC 6, ESC 7, ESC :, ESC t, ESC ( t, Defining user-defined characters, Sending user-defined character data to printer

**Format**

The format for this command depends on whether you are defining draft characters or NLQ characters.

**Draft:**

ASCII	ESC	&	NUL	n	m	[a	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub> ]
Hex	1B	26	00	n	m	[a	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub> ]
Decimal	27	38	0	n	m	[a	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub> ]

**NLQ:**

ASCII	ESC	&	NUL	n	m	0	[a	0	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub> ]
Hex	1B	26	00	n	m	0	[a	0	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub> ]
Decimal	27	38	0	n	m	0	[a	0	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub> ]

**Parameter range**

<b>Draft (FX):</b>	<b>Draft (LX):</b>
0 ≤ a ≤ 255	0 ≤ a ≤ 255
0 ≤ m ≤ 255	58 ≤ m ≤ 63
0 ≤ n ≤ 255	58 ≤ n ≤ 63
m ≤ n	m ≤ n
0 ≤ d ≤ 255	0 ≤ d ≤ 255

**NLQ:**

0 ≤ a ≤ 12
58 ≤ m ≤ 63
58 ≤ n ≤ 63
m ≤ n
0 ≤ d ≤ 255

**Function**

Sets the parameters for user-defined characters and then sends the data for those characters, as described below:

- n            Character code of the first character to be user-defined
- m            Character code of the last character to be user-defined
- a            Sets parameters for characters to be user-defined
- d<sub>1</sub> . . . d<sub>k</sub>    Character data

## Notes

- The data within brackets in the Format section above is repeated for each character you define.
- The format of the attribute byte “a” is different for draft and NLQ characters.

## Draft

You can define characters 11-dots wide by 8-dots high. You must specify whether to define the upper or lower 8 dots of the 9 dots available. You can also specify the columns not printed on the left and right of the characters during proportional spacing. Set both these parameters with the a parameter, as described below:

*Attribute byte table*

Beginning Column		Ending Column		Upper/Lower 8 pins	
Column number	Value	Column number	Value	Pin group	Value
0	0	1	1	Upper 8 pins	128
1	16	2	2	Lower 8 pins	0
2	32	3	3		
3	48	4	4		
4	64	5	5		
5	80	6	6		
6	96	7	7		
7	112	8	8		
		9	9		
		10	10		
		11	11		

Add up the values for all three settings; the value for a is this total.

## NLQ

The attribute byte a equals the width of the character, between 1 and 12 dot columns.

- Only NLQ characters can be defined on LX printers, ActionPrinter Apex 80, ActionPrinter 2000, ActionPrinter 2250, and ActionPrinter T-1000.
- When you switch to NLQ printing on FX printers, the printer enhances user-defined characters to appear as NLQ-mode characters.
- Defining characters during draft or NLQ mode results in the user-defined characters having the draft or NLQ attribute. You cannot define characters of different attributes at the same time; previously defined characters will be deleted.
- Always cancel italic characters with the ESC 5 command before defining characters. After defining user-defined characters, you can italicize them by sending the ESC 4 command.
- Do not define continuous dots on the same row during draft mode; the printer ignores the second of two continuous dots.
- Send the ESC % 1 command to switch to user-defined characters.
- Send the ESC I 1 command to allow you to print the characters between 128 and 159 and the non-control code characters between 0 and 31.

### *Printers not featuring this command*

None

### *Model-dependent variations*

All LX-series printers, ActionPrinter Apex 80, ActionPrinter T-1000, ActionPrinter 2250 and ActionPrinter 2000

Only the 6 characters between 58 and 63 can be defined.

### *Related topics*

ESC %, ESC :, ESC I, ESC 6, ESC 7, Defining user-defined characters, Sending user-defined character data to printer

**Format**

ASCII	ESC	:	NUL	n	m
Hex	1B	3A	00	n	m
Decimal	27	58	0	n	m

**Parameter range**

$0 \leq n \leq 127$

$m = 0$

**Function**

Copies the data for the characters between 0 and 126 of the n typeface from ROM to RAM memory

**Notes**

- The following attributes are reflected in the copied font: typeface, international character set, size (super/subscript or normal), and quality (draft/LQ). Do not change any attributes before modifying characters in the copied font.
- Always cancel italics with the ESC 5 command before copying ROM characters to RAM. You can italicize characters after copying by sending the ESC 4 command.
- Sending this command clears any previous characters copied to RAM.
- The printer ignores this command if the specified typeface is not available in ROM.
- See ESC k for a list of the selectable fonts.

**Printers not featuring this command**

None

**Model-dependent variations**

- On non-ESC/P 2 printers:
- The Orator and Orator-S fonts cannot be copied.
- The Script C font is not available

**Related topics**

ESC %, ESC &, ESC ( ^, ESC x, ESC k, Copying ROM characters to RAM memory

**Format**

ASCII	ESC	:	NUL	n	m
Hex	1B	3A	00	n	m
Decimal	27	58	0	n	m

**Parameter range**

n = 0, 1

m = 0

**Function**

Copies the data for the characters between 0 and 255 of the Roman or Sans Serif typeface from ROM to RAM memory according to the following values:

n = 0	Roman
1	Sans serif

**Notes**

- Sending this command clears any previous characters copied to RAM.
- Characters from 128 to 255 are copied from the italic character table

**Printers not featuring this command**

None

**Model-dependent variations**

DFX-5000, ActionPrinter T-750

Only draft characters can be copied to RAM.

LX-series printers, ActionPrinter Apex 80, ActionPrinter T-1000, ActionPrinter 2000

Only characters from 58 to 63 can be copied to RAM.

**Related topics**

ESC %, ESC &, ESC x, Copying ROM characters to RAM memory

***Format***

ASCII	ESC	%	n
Hex	1B	25	n
Decimal	27	37	n

***Parameter range***

n = 0, 1, 48, 49

***Function***

Switches between normal and user-defined characters, as follows:

n = 0 or 48	Normal (ROM) characters
1 or 49	User-defined (RAM) characters

***Default***

Normal (ROM) characters

***Notes***

Switch to ROM characters (ESC % 0) before selecting user-defined characters using the ESC t 2 command.

***Printers not featuring this command***

None

***Model-dependent variations***

None

***Related topics***

ESC :, ESC &, ESC t, ESC ( t, Switching to RAM character printing

**Format**

ASCII	ESC	%	n
Hex	1B	25	n
Decimal	27	37	n

**Parameter range**

n = 0, 1, 48, 49

**Function**

Switches between normal and user-defined characters, as follows:

- n = 0 or 48      Normal (ROM) characters
- 1 or 49      User-defined (RAM) characters

**Default**

Normal (ROM) characters

**Printers not featuring this command**

None

**Model-dependent variations**

FX-850 and FX-1050

Draft user-defined characters are converted to LQ characters during LQ mode.

**Related topics**

ESC :, ESC &, ESC 6, ESC 7, Switching to RAM character printing

***Format***

ASCII	ESC	x	n
Hex	1B	78	n
Decimal	27	120	n

***Parameter range***

n = 0, 1, 48, 49

***Function***

Selects either LQ or draft printing according to the following values:

n = 0 or 48	Draft printing
1 or 49	Letter-quality printing

***Notes***

If you select proportional spacing with the ESC p command during draft printing, the printer prints an LQ font instead. When you cancel proportional spacing with the ESC p command, the printer returns to draft printing.

***Printers not featuring this command***

None

***Model-dependent variations***

None

***Related topics***

ESC k, Print quality (draft, LQ, or NLQ)

***Format***

ASCII	ESC	x	n
Hex	1B	78	n
Decimal	27	120	n

***Parameter range***

n = 0, 1, 48, 49

***Function***

Selects either NLQ or draft printing according to the following values:

n = 0 or 48	Draft printing is selected
1 or 49	NLQ printing is selected

***Notes***

Double-strike printing is not possible when NLQ printing is selected

***Printers not featuring this command***

None

***Model-dependent variations***

None

***Related topics***

ESC k, Print quality (draft, LQ, or NLQ)

**Format**

ASCII	ESC	k	n
Hex	1B	6B	n
Decimal	27	107	n

**Parameter range**

$$0 \leq n \leq 9$$

**Function**

Selects the typeface for LQ printing according to the following values:

0	Roman	7	Orator
1	Sans serif	8	Orator-S
2	Courier	9	Script C
3	Prestige	10	Roman T
4	Script	11	Sans serif H
5	OCR-B	30	SV Busaba
6	OCR-A	31	SV Jittra

**Default**

n = 0 (Roman)

**Notes**

- The printer ignores this command if the user-defined character set is selected.
- The Roman typeface is selected if the selected typeface is not available.
- If draft mode is selected when this command is sent, the new LQ typeface will be selected when the printer returns to LQ printing.

**Printers not featuring this command**

None

**Model-dependent variations**

Not all printers feature all typefaces; see the Command Table section for the typefaces available on each printer model.

**Related topics**

ESC x, ESC X, ESC %, ESC :, Selecting the typeface, Copying ROM characters to RAM memory

**Format**

ASCII	ESC	k	n
Hex	1B	6B	n
Decimal	27	107	n

**Parameter range**

n = 0, 1

**Function**

Selects the typeface for LQ font printing according to the following values:

0	Roman
1	Sans serif

**Default**

n = 0 (Roman)

**Notes**

- The printer ignores this command if the user-defined character set is selected.
- If draft mode is selected when this command is sent, the new typeface will be selected when the printer returns to LQ printing.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC x, ESC %, ESC :, Selecting the typeface, Copying ROM characters to RAM

**Format**

ASCII	ESC	X	m	n <sub>L</sub>	n <sub>H</sub>
Hex	1B	58	m	n <sub>L</sub>	n <sub>H</sub>
Decimal	27	88	m	n <sub>L</sub>	n <sub>H</sub>

**Parameter range**

$$5 \leq m \leq 127 \quad m = 0, 1$$

$$0 \leq n_L \leq 255$$

$$0 \leq n_H \leq 127$$

**Function**

Puts the printer in multipoint (scalable font) mode, and selects the pitch and point attributes of the font according to the following formulas:

Pitch:

m = 0	No change in pitch
m = 1	Selects proportional spacing
m ≥ 5	Selects fixed pitch equal to 360/m cpi

Point size:

$$(\text{point size}) = \frac{(n_H \times 256) + n_L}{2} \quad 1 \text{ point equals } 1/72 \text{ inch}$$

$$n_H = \text{INT} \frac{(\text{point size}) \times 2}{256}$$

$$n_L = \text{MOD} \frac{(\text{point size}) \times 2}{256}$$

n<sub>H</sub> = n<sub>L</sub> = 0 No change in point size

**Default**

Pitch = 10 cpi (m = 36)

Point = 10.5 (n<sub>H</sub> = 0, n<sub>L</sub> = 21)

**Notes**

- This command is available only on printers featuring ESC/P 2.
- This command overrides the current pitch setting.
- Only the following point sizes are available: 8, 10 (10.5), 12, 14, 16, 18, 20 (21), 22, 24, 26, 28, 30, 32
- Selecting a combination of 15 cpi and 10 or 20-point characters results in 15-cpi ROM characters being chosen; the height of these characters is about 2/3 that of normal characters. Select the pitch with the ESC C command to obtain normal height 10 or 20-point characters at 15 cpi.

- During multipoint mode the printer ignores the ESC W, ESC w, ESC SP, SI, ESC SI, SO, and ESC SO commands.
- The following commands cancel multipoint mode, returning the printer to 10.5-point characters: ESC P, ESC M, ESC g, ESC p, ESC !, and ESC @.

### *Printers not featuring this command*

All non-ESC/P 2 printers

### *Model-dependent variations*

Not all fonts are scalable; see the Command Table section for details on which fonts are scalable on each printer model.

### *Related topics*

ESC c, ESC P, ESC M, ESC g, ESC p, ESC !, Selecting the point size, Selecting the pitch

**Format**

ASCII	ESC	c	n <sub>L</sub>	n <sub>H</sub>
Hex	1B	63	n <sub>L</sub>	n <sub>H</sub>
Decimal	27	99	n <sub>L</sub>	n <sub>H</sub>

**Parameter range**

$$0 \leq n_H \leq 4$$

$$0 \leq n_L \leq 255$$

$$0 < ((n_H \times 256) + n_L) \leq 1080 ; \text{HMI} \leq 3.00 \text{ inches}$$

**Function**

Fixes the character width (HMI) according to the following formula:

$$\text{HMI} = \frac{(n_H \times 256) + n_L}{360} \text{ inch}$$

$$n_H = \text{INT} \frac{\text{HMI} \times 360}{256}$$

$$n_L = \text{MOD} \frac{\text{HMI} \times 360}{256}$$

**Default**

Depends on panel or DIP-switch setting

**Notes**

- This command is available only on printers featuring ESC/P 2.
- This command cancels additional character space set with the ESC SP command.
- The HMI setting made with this command is canceled when the printer receives the following commands: SO, SI, DC2, DC4, ESC W, ESC P, ESC M, ESC g, ESC p, ESC !, ESC SP, and ESC @.
- Use this command to set the pitch if you want to print normal-height 10 or 20-point characters at 15 cpi during multipoint mode. Selecting 15 cpi for 10 or 20-point characters with the ESC X command results in characters being printed at 2/3 their normal height.

**Printers not featuring this command**

All non-ESC/P 2 printers

**Model-dependent variations**

None

**Related topics**

ESC X, ESC P, ESC M, ESC g, ESC p, ESC !, Selecting the pitch

*Format*

ASCII	ESC	P
Hex	1B	50
Decimal	27	80

*Function*

Selects 10.5-point, 10-cpi character printing

*Default*

10.5-point, 10-cpi characters

*Notes*

- This command cancels the HMI set with the ESC c command.
- This command cancels multipoint mode.
- If you change the pitch with this command during proportional mode (selected with the ESC p command), the change takes effect when the printer exits proportional mode.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC M, ESC g, ESC p, ESC X, ESC c, ESC !, Selecting the pitch

**Format**

ASCII	ESC	P
Hex	1B	50
Decimal	27	80

**Function**

Selects 10-cpi character pitch

**Default**

10-cpi characters

**Notes**

If you change the fixed-pitch setting with this command during proportional mode (selected with the ESC p command), the change takes effect when the printer exits proportional mode.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC M, ESC p, ESC !, Selecting the pitch

*Format*

ASCII	ESC	M
Hex	1B	4D
Decimal	27	77

*Function*

Selects 10.5-point, 12-cpi character printing

*Default*

10.5-point, 10-cpi characters

*Notes*

- This command cancels the HMI set with the ESC c command.
- This command cancels multipoint mode.
- If you change the pitch with this command during proportional mode (selected with the ESC p command), the change takes effect when the printer exits proportional mode.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC P, ESC g, ESC p, ESC X, ESC c, ESC !, Selecting the pitch

***Format***

ASCII	ESC	M
Hex	1B	4D
Decimal	27	77

***Function***

Selects 12-cpi character pitch

***Default***

10-cpi characters

***Notes***

If you change the pitch with this command during proportional mode (selected with the ESC p command), the change takes effect when the printer exits proportional mode.

***Printers not featuring this command***

None

***Model-dependent variations***

None

***Related topics***

ESC P, ESC p, ESC l, Selecting the pitch

**Format**

ASCII	ESC	g
Hex	1B	67
Decimal	27	103

**Function**

Selects 10.5-point, 15-cpi character printing

**Default**

10.5-point, 10-cpi characters

**Notes**

- This command cancels the HMI set with the ESC c command.
- This command cancels multipoint mode.
- If you change the pitch with this command during proportional mode (selected with the ESC p command), the change takes effect when the printer exits proportional mode.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC M, ESC P, ESC p, ESC c, ESC X, Selecting the pitch

**Format**

ASCII	ESC	g
Hex	1B	67
Decimal	27	103

**Function**

Selects 15-cpi character printing

**Default**

10-cpi characters

**Notes**

If you change the fixed-pitch setting with this command during proportional mode (selected with the ESC p command), the change takes effect when the printer exits proportional mode.

**Printers featuring this command**

FX-2170, DFX-5000+

**Model-dependent variations**

None

**Related topics**

ESC M, ESC P, ESC p, ESC !, Selecting the pitch

**Format**

ASCII	ESC	p	n
Hex	1B	70	n
Decimal	27	112	n

**Parameter range**

n = 0, 1, 48, 49

**Function**

Selects either proportional or fixed character spacing according to the following values:

n = 0 or 48	Returns to current fixed character pitch
1 or 49	Selects proportional spacing

**Default**

Fixed character spacing

**Notes**

- This command cancels the HMI set with the ESC c command.
- This command cancels multipoint mode.
- Changes made to the fixed-pitch setting with the ESC P, ESC M, or ESC g commands during proportional mode take effect when the printer exits proportional mode.
- The printer automatically switches to LQ printing when proportional spacing is selected.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC M, ESC P, ESC g, ESC !, ESC X, ESC c, Selecting the pitch

**Format**

ASCII	ESC	p	n
Hex	1B	70	n
Decimal	27	112	n

**Parameter range**

n = 0, 1, 48, 49

**Function**

Selects either proportional or fixed character spacing according to the following values:

n = 0 or 48	Returns to current fixed character pitch
1 or 49	Selects proportional character spacing

**Default**

Fixed character spacing

**Notes**

- Changes made to the fixed-pitch setting with the ESC P, ESC M, or ESC g commands during proportional mode take effect when the printer exits proportional mode.
- Condensed mode is not available when proportional spacing is selected.

**Printers not featuring this command**

ActionPrinter Apex 80, ActionPrinter T-1000, ActionPrinter 2000, LX-400, LX-800, LX-810, LX-850, LX-1050

**Model-dependent variations**

None

**Related topics**

ESC M, ESC P, ESC !, Selecting the pitch

**Format**

ASCII	ESC	SP	n
Hex	1B	20	n
Decimal	27	32	n

**Parameter range** $0 \leq n \leq 127$ **Function**

Increases the space between characters by  $n/180$  inch in LQ mode and  $n/120$  inch in draft mode

**Default**

No extra space

**Notes**

- This command cancels the HMI (horizontal motion unit) set with the ESC c command.
- The extra space set with this command doubles during double-width mode.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC c, ESC M, ESC P, ESC g, ESC !, ESC I, ESC Q, ESC D, HT, Selecting the pitch, Setting left and right margins

**Format**

ASCII	ESC	SP	n
Hex	1B	20	n
Decimal	27	32	n

**Parameter range**

$0 \leq n \leq 127$

**Function**

Increases the space between characters by  $n/120$  inch

**Default**

No extra space

**Notes**

The extra space set with this command doubles during double-width mode.

**Printers not featuring this command**

LX-series printers, ActionPrinter Apex 80, ActionPrinter T-1000, ActionPrinter 2000

**Model-dependent variations**

None

**Related topics**

ESC M, ESC P, ESC !, ESC I, ESC Q, ESC D, HT, Selecting the pitch, Setting left and right margins

*Format*

ASCII	ESC	E
Hex	1B	45
Decimal	27	69

*Function*

Sets the weight attribute of the font to bold

*Default*

Normal (nonbold) weight

*Notes*

This command increases the weight of printed lines and characters, resulting in bolder printing.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC F, ESC G, ESC H, Select a font, Selecting the weight

***Format***

ASCII	ESC	E
Hex	1B	45
Decimal	27	69

***Function***

Sets the weight attribute of the font to bold

***Default***

Normal (nonbold) weight

***Notes***

This command increases the weight of printed lines and characters, resulting in bolder printing.

***Printers not featuring this command***

None

***Model-dependent variations***

None

***Related topics***

ESC F, ESC G, ESC H, Select a font, Selecting the weight

**Format**

ASCII	ESC	F
Hex	1B	46
Decimal	27	70

**Function**

Sets the weight attribute of the font to normal (cancels the bold weight previously set with the ESC E command)

**Default**

Normal (nonbold) weight

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC E, ESC G, ESC H, Select a font, Selecting the weight

*Format*

ASCII	ESC	F
Hex	1B	46
Decimal	27	70

*Function*

Sets the weight attribute of the font to normal (cancels the bold weight previously set with the ESC E command)

*Default*

Normal (nonbold) weight

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC E, ESC G, ESC H, Select a font, Selecting the weight

*Format*

ASCII	ESC	4
Hex	1B	34
Decimal	27	52

*Function*

Sets the style attribute of the font to italic

*Default*

Normal (non-italic) style

*Notes*

- This command selects italic printing even if the italic character table is not selected.
- Always cancel italics before defining user-defined characters.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC 5, Select a font, Selecting the style

*Format*

ASCII	ESC	4
Hex	1B	34
Decimal	27	52

*Function*

Sets the style attribute of the font to italic

*Default*

Normal (non-italic) style

*Notes*

- This command selects italic printing even if the italic character table is not selected.
- Always cancel italics before defining user-defined characters.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC 5, Select a font, Selecting the style

**Format**

ASCII	ESC	5
Hex	1B	35
Decimal	27	53

**Function**

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

**Default**

Normal (non-italic) style

**Notes**

Always cancel italics before defining user-defined characters.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC 4, Select a font, Selecting the style

*Format*

ASCII	ESC	5
Hex	1B	35
Decimal	27	53

*Function*

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

*Default*

Normal (non-italic) style

*Notes*

Always cancel italics before defining user-defined characters.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC 4, Select a font, Selecting the style

**Format**

ASCII	ESC	!	n
Hex	1B	21	n
Decimal	27	33	n

**Parameter range**
 $0 \leq n \leq 255$ 
**Function**

Selects any combination of several font attributes and enhancements by setting or clearing the appropriate bit in the n parameter, as shown below:

Bit	On/Off	Hex	Dec	Function	Equivalent
0	Off	00	0	Selects 10 cpi	ESC P
	On	01	1	Selects 12 cpi	ESC M
1	Off	00	0	Cancel proportional	ESC p 0
	On	02	2	Selects proportional	ESC p 1
2	Off	00	0	Cancel condensed	DC2
	On	04	4	Selects condensed	SI
3	Off	00	0	Cancel bold	ESC F
	On	08	8	Selects bold	ESC E
4	Off	00	0	Cancel double-strike	ESC H
	On	10	16	Selects double-strike	ESC G
5	Off	00	0	Cancel double-width	ESC W 0
	On	20	32	Selects double-width	ESC W 1
6	Off	00	0	Cancel italics	ESC 5
	On	40	64	Selects italics	ESC 4
7	Off	00	0	Cancel underline	ESC - 0
	On	80	128	Selects underline	ESC - 1

Add the numbers of the features to be selected and send the total as the parameter n.

**Notes**

- This command cancels multipoint mode.
- This command cancels the HMI selected with the ESC c command.
- This command cancels any attributes or enhancements that are not selected.
- All attributes or enhancements may not be available on some models. For details, see the explanation for the equivalent command listed in the table above.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC X, ESC c, Select a font

**Format**

ASCII	ESC	!	n
Hex	1B	21	n
Decimal	27	33	n

**Parameter range**

$$0 \leq n \leq 255$$

**Function**

Selects any combination of several font attributes and enhancements by setting or clearing the appropriate bit in the n parameter, as shown below:

Bit	On/Off	Hex	Dec	Function	Equivalent
0	Off	00	0	Selects 10 cpi	ESC P
	On	01	1	Selects 12 cpi	ESC M
1	Off	00	0	Cancel proportional	ESC p 0
	On	02	2	Selects proportional	ESC p 1
2	Off	00	0	Cancel condensed	DC2
	On	04	4	Selects condensed	ESC SI, SI
3	Off	00	0	Cancel bold	ESC F
	On	08	8	Selects bold	ESC E
4	Off	00	0	Cancel double-strike	ESC H
	On	10	16	Selects double-strike	ESC G
5	Off	00	0	Cancel double-width	ESC W 0
	On	20	32	Selects double-width	ESC W 1
6	Off	00	0	Cancel italics	ESC 5
	On	40	64	Selects italics	ESC 4
7	Off	00	0	Cancel underline	ESC - 0
	On	80	128	Selects underline	ESC - 1

Add the numbers of the features to be selected and send the total as the parameter n.

**Notes**

- This command cancels any attributes or enhancements that are not selected.
- All attributes or enhancements may not be available on some models. For details, see the command explanation for the equivalent command listed in the above table.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

Select a font

**Format**

ASCII	ESC	G
Hex	1B	47
Decimal	27	71

**Function**

Prints each dot twice, with the second slightly below the first, creating bolder characters

**Default**

Normal (nondouble-strike) printing

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC H, ESC E, ESC F, Double-strike

**Format**

ASCII	ESC	G
Hex	1B	47
Decimal	27	71

**Function**

Prints each dot twice, with the second slightly below the first, creating bolder characters

**Default**

Normal (nondouble-strike) printing

**Notes**

LQ mode overrides double-strike printing; double-strike printing resumes when LQ mode is canceled.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC H, ESC E, ESC F, Double-strike

**Format**

ASCII	ESC	H
Hex	1B	48
Decimal	27	72

**Function**

    Cancels double-strike printing selected with the ESC G command

**Default**

    Normal (nondouble-strike) printing

**Printers not featuring this command**

    None

**Model-dependent variations**

    None

**Related topics**

    ESC G, ESC E, ESC F, Double-strike

**Format**

ASCII	ESC	H
Hex	1B	48
Decimal	27	72

**Function**

    Cancels double-strike printing selected with the ESC G command

**Default**

    Normal (nondouble-strike) printing

**Printers not featuring this command**

    None

**Model-dependent variations**

    None

**Related topics**

    ESC G, ESC E, ESC F, Double-strike

**Format**

ASCII	ESC	-	n
Hex	1B	2D	n
Decimal	27	45	n

**Parameter range**

n = 0, 1, 48, 49

**Function**

Turns on/off printing of a line below all characters and spaces following this command:

n = 1 or 49	Turns underline on
0 or 48	Turns underline off

**Default**

Normal (non-underlined) printing

**Notes**

- The underline is printed with the following characteristics: draft, LQ, bold, or double-strike.
- The underline is not printed across the distance the horizontal print position is moved with the following commands:
  - ESC \$
  - ESC \ (when the print position is moved to the left)
  - HT
- Graphics characters are not underlined.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC (-, Score

**Format**

ASCII	ESC	-	n
Hex	1B	2D	n
Decimal	27	45	n

**Parameter range**

n = 0, 1, 48, 49

**Function**

Turns on/off printing of a line below all characters and spaces following this command:

n = 1 or 49	Turns on underline
0 or 48	Turns off underline

**Default**

Normal (non-underlined) printing

**Notes**

- The underline is printed with the following characteristics: draft, LQ, bold, or double-strike.
- The underline is not printed across the distance the horizontal print position is moved with the following commands:  
ESC \$  
ESC \ (when the print position is moved to the left)  
HT
- Graphics characters are not underlined.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

Score

**Format**

ASCII	ESC	(	-	n <sub>L</sub>	n <sub>H</sub>	m	d1	d2
Hex	1B	28	2D	n <sub>L</sub>	n <sub>H</sub>	m	d1	d2
Decimal	27	40	45	n <sub>L</sub>	n <sub>H</sub>	m	d1	d2

**Parameter range**

n<sub>L</sub> = 3, n<sub>H</sub> = 0  
 m = 1  
 1 ≤ d<sub>1</sub> ≤ 3  
 d<sub>2</sub> = 0, 1, 2, 5, 6

**Function**

Turns on/off scoring of all characters and spaces following this command, according to the parameters below:

d <sub>1</sub> = 1	Underline
2	Strikethrough
3	Overscore
d <sub>2</sub> = 0	Turn off scoring
1	Single continuous line
2	Double continuous line
5	Single broken line
6	Double broken line

**Default**

No scoring

**Notes**

- This command is only available on 24 and 48-pin printers.
- Each type of scoring is independent of other types; any combination of scoring methods may be set simultaneously.
- The position and thickness of scoring depends on the current point size setting.
- The score is printed with the following characteristics: draft, LQ, bold, or double- strike.
- Graphics characters are not scored.
- Scoring is not printed across the distance the horizontal print position is moved with the following commands:  
 ESC \$  
 ESC \ (when the print position is moved to the left)  
 HT

*Printers not featuring this command*

ActionPrinter L-1000, LQ-400, LQ-500, LQ-2550

*Model-dependent variations*

None

*Related topics*

ESC -, Score

**Format**

ASCII	ESC	S	n
Hex	1B	53	n
Decimal	27	83	n

**Parameter range**

n = 0, 1, 48, 49

**Function**

Prints characters that follow at about 2/3 their normal height; the printing location depends on the value of n as follows:

n = 1 or 49	Lower part of the character space
0 or 48	Upper part of the character space

**Default**

Normal (non-super/subscript) characters

**Notes**

- This command does not affect graphics characters.
- The width of super/subscript characters when using proportional spacing differs from that of normal characters; see the super/subscript character proportional width table in the Appendix.
- The underline strikes through the descenders on subscript characters during underlining.
- Use the ESC T command to cancel super/subscript printing.
- When point sizes other than 10 (10.5) and 20 (21) are selected in multipoint mode, super/subscript characters are printed at the nearest point size less than or equal to 2/3 the current size.
- When 8-point characters are selected, super/subscript characters are also 8-point characters.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC T, Super/subscript

**Format**

ASCII	ESC	S	n
Hex	1B	53	n
Decimal	27	83	n

**Parameter range**

n = 0, 1, 48, 49

**Function**

Prints characters that follow at about 2/3 their normal height; the printing location depends on the value of n as follows:

n = 1 or 49	Lower part of the character space
0 or 48	Upper part of the character space

**Default**

Normal (non-super/subscript) characters

**Notes**

- This command does not affect graphics characters.
- The width of super/subscript characters when using proportional spacing is the same as that of normal characters.
- The underline strikes through the descenders on subscript characters during underline mode.
- Use the ESC T command to cancel super/subscript printing.

**Printers not featuring this command**

None

**Model-dependent variations**

FX-850, FX-1050

Selecting double-height printing overrides super/subscript printing; super/subscript printing resumes when double-height printing is canceled.

**Related topics**

ESC T, Super/subscript

**Format**

ASCII	ESC	T
Hex	1B	54
Decimal	27	84

**Function**

    Cancels super/subscript printing selected by the ESC S command

**Default**

    Normal (non-super/subscript) printing

**Printers not featuring this command**

    None

**Model-dependent variations**

    None

**Related topics**

    ESC S, Super/subscript

**Format**

ASCII	ESC	T
Hex	1B	54
Decimal	27	84

**Function**

    Cancels super/subscript printing selected by the ESC S command

**Default**

    Normal (non-super/subscript) printing

**Printers not featuring this command**

    None

**Model-dependent variations**

    None

**Related topics**

    ESC S, Super/subscript

**Format**

ASCII	ESC	q	n
Hex	1B	71	n
Decimal	27	113	n

**Parameter range**

$$0 \leq n \leq 3$$

**Function**

Turns on/off outline and shadow printing, according to the parameters below:

- n = 0 Turn off outline/shadow printing
- 1 Turn on outline printing
- 2 Turn on shadow printing
- 3 Turn on outline and shadow printing

**Default**

Outline/shadow printing off

**Notes**

- This command is available only on 24 and 48-pin printers.
- This command does not affect graphics characters.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

Shadow/outline

**Format**

ASCII	SI
Hex	0F
Decimal	15

**Function**

Enters condensed mode, in which character width is reduced as follows:

Selected pitch	Condensed pitch
10 cpi	17.14 cpi
12 cpi	20 cpi
Proportional	1/2 width

**Default**

Noncondensed printing

**Notes**

- This command is ignored under the following two conditions:
  - The printer is in multipoint mode.
  - 15-cpi printing has been selected with the ESC g command.
- This command cancels the HMI (horizontal motion index) set with the ESC c command.
- This command reduces character width by about 50% when proportional spacing is selected with the ESC p command.
- Cancel condensed printing with the DC2 command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

DC2, Selecting the pitch

**Format**

ASCII	SI
Hex	0F
Decimal	15

**Function**

Enters condensed mode, in which character width is reduced as follows:

Selected pitch	Condensed pitch
10 cpi	17.14 cpi
12 cpi	20 cpi

**Default**

Noncondensed printing

**Notes**

Cancel condensed printing with the DC2 command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

DC2, Selecting the pitch

**Format**

ASCII	ESC	SI
Hex	1B	0F
Decimal	27	15

**Function**

Enters condensed mode, in which character width is reduced as follows:

Selected pitch	Condensed pitch
10 cpi	17.14 cpi
12 cpi	20 cpi
Proportional	1/2 width

**Default**

Noncondensed printing

**Notes**

- This is a nonrecommended command; use the SI command instead.
- This command is ignored under the following two conditions:
  - The printer is in multipoint mode.
  - 15-cpi printing has been selected with the ESC g command.
- This command cancels the HMI (horizontal motion index) set with the ESC c command.
- This command reduces character width by about 50% when proportional spacing is selected with the ESC p command.
- Cancel condensed printing with the DC2 command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

DC2, SI, Selecting the pitch

**Format**

ASCII	ESC	SI
Hex	1B	0F
Decimal	27	15

**Parameter range**

No parameters

**Function**

Enters condensed mode, in which characters width is reduced as follows:

Selected pitch	Condensed pitch
10 cpi	17.14 cpi
12 cpi	20 cpi

**Default**

Noncondensed printing

**Notes**

- This is a nonrecommended command; use the SI command instead.
- Cancel condensed printing with the DC2 command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

SI, DC2, Selecting the pitch

**Format**

ASCII	DC2
Hex	12
Decimal	18

**Function**

    Cancels condensed printing selected by the SI or ESC SI commands

**Default**

    Normal (noncondensed) printing

**Notes**

    This command cancels the HMI (horizontal motion index) set with the ESC c command.

**Printers not featuring this command**

    None

**Model-dependent variations**

    None

**Related topics**

    SI

**Format**

ASCII	DC2
Hex	12
Decimal	18

**Function**

    Cancels condensed printing selected by the SI or ESC SI commands

**Default**

    Normal (noncondensed) printing

**Printers not featuring this command**

    None

**Model-dependent variations**

    None

**Related topics**

    SI

**Format**

ASCII	SO
Hex	0E
Decimal	14

**Function**

Doubles the width of all characters, spaces, and intercharacter spacing (set with the ESC SP command) following this command on the same line.

**Default**

Normal (nondouble-width) printing

**Notes**

- This command is canceled when the buffer is full, or the printer receives the following commands: LF, FF, VT, DC4, ESC W 0.
- This command is not canceled by the VT command when it functions the same as a CR command.
- This command cancels the HMI (horizontal motion index) set with the ESC c command.

**Printers not featuring this command**

None

**Model-dependent variations**

On non-ESC/P 2 printers:

This command is also canceled when the printer receives the following commands: CR and VT (when it functions the same as a CR command).

**Related topics**

ESC W, DC4

*Format*

ASCII	SO
Hex	0E
Decimal	14

*Function*

Doubles the width of all characters, spaces, and intercharacter spacing (set with the ESC SP command) following this command on the same line.

*Default*

Normal (nondouble-width) printing

*Notes*

This command is canceled when the buffer is full, or the printer receives the following commands: CR, LF, FF, VT, DC4, ESC W 0.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC W, DC4

**Format**

ASCII	ESC	SO
Hex	1B	0E
Decimal	27	14

**Function**

Doubles the width of all characters, spaces, and intercharacter spacing (set with the ESC SP command) following this command on the same line.

**Default**

Normal (nondouble-width) printing

**Notes**

- This is a nonrecommended command; use the SO command instead.
- This command is canceled when the buffer is full, or the printer receives the following commands: LF, FF, VT, DC4, ESC W 0.
- This command is not canceled by the VT command when it functions the same as a CR command.
- This command cancels the HMI (horizontal motion index) set with the ESC c command.

**Printers not featuring this command**

None

**Model-dependent variations**

On non-ESC/P 2 printers:

This command is also canceled when the printer receives the following commands: CR and VT (when it functions the same as a CR command).

**Related topics**

SO, DC4

**Format**

ASCII	ESC	SO
Hex	1B	0E
Decimal	27	14

**Function**

Doubles the width of all characters, spaces, and intercharacter spacing (set with the ESC SP command) following this command on the same line

**Default**

Normal (nondouble-width) printing

**Notes**

- This is a nonrecommended command; use the SO command instead.
- This command is canceled when the buffer is full, or the printer receives the following commands: CR, LF, FF, VT, DC4, ESC W 0.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

SO, DC4, ESC W

**Format**

ASCII	DC4
Hex	14
Decimal	20

**Parameter range**

No parameters

**Function**

Cancels double-width printing selected by the SO or ESC SO commands

**Default**

Normal (nondouble-width)

**Notes**

- This command cancels the HMI (horizontal motion index) set with the ESC c command.
- This command does not cancel double-width printing selected with the ESC W command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

SO

**Format**

ASCII	DC4
Hex	14
Decimal	20

**Function**

    Cancels double-width printing selected by the SO or ESC SO commands.

**Default**

    Normal (nondouble-width) printing

**Notes**

    This command does not cancel double-width printing selected with the ESC W command.

**Printers not featuring this command**

    None

**Model-dependent variations**

    None

**Related topics**

    SO

**Format**

ASCII	ESC	W	n
Hex	1B	57	n
Decimal	27	87	n

**Parameter range**

n = 0, 1, 48, 49

**Function**

Turns on/off double-width printing of all characters, spaces, and intercharacter spacing (set with the ESC SP command) following this command as follows:

n = 1 or 49	Turns on double-width
0 or 48	Turns off double-width

**Default**

Normal (nondouble-width) printing

**Notes**

This command cancels the HMI (horizontal motion index) set with the ESC c command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

SO, DC4

**Format**

ASCII	ESC	W	n
Hex	1B	57	n
Decimal	27	87	n

**Parameter range**

n = 0, 1, 48, 49

**Function**

Turns on/off double-width printing of all characters, spaces, and intercharacter spacing (set with the ESC SP command) following this command as follows:

n = 1 or 49	Turns on double-width
0 or 48	Turns off double-width

**Default**

Normal (nondouble-width) printing

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

SO, DC4

**Format**

ASCII	ESC	w	n
Hex	1B	77	n
Decimal	27	119	n

**Parameter range**

n = 0, 1, 48, 49

**Function**

Turns on/off double-height printing of all characters, as measured from the current baseline:

n = 1 or 49	Turns on double-width
0 or 48	Turns off double-width

**Default**

Standard-height printing

**Notes**

- This command does not affect line spacing.
- The first line of a page is not doubled if ESC w is sent on the first printable line; all following lines are printed at double-height.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

Selecting the point size

**Format**

ASCII	ESC	w	n
Hex	1B	77	n
Decimal	27	119	n

**Parameter range**

n = 0, 1, 48, 49

**Function**

Turns on/off double-height printing of all characters, as measured from the current baseline:

n = 1 or 49	Turns on double-width
0 or 48	Turns off double-width

**Default**

Standard-height printing

**Notes**

- This command does not affect line spacing.
- The first line of a page is not doubled if the ESC w command is sent on the first line; all following lines are printed at double-height.
- Double-height printing overrides super/subscript, condensed, and high-speed draft printing; super/subscript, condensed, and high-speed draft printing resume when double-height printing is canceled.

**Printers not featuring this command**

ActionPrinter Apex 80, ActionPrinter T-1000, DFX-5000, DFX-5000+, LX-Series printers

**Model-dependent variations**

None

**Related topics**

Selecting the point size

**Format**

ASCII	ESC	(	^	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	...	d <sub>k</sub>
Hex	1B	28	5E	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	...	d <sub>k</sub>
Decimal	27	40	94	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	...	d <sub>k</sub>

**Parameter range**

$$0 \leq n_H \leq 127$$

$$0 \leq n_L \leq 255$$

**Function**

- Prints data bytes d<sub>1</sub> through d<sub>k</sub> as characters, not control codes
- The amount of data to be sent is calculated as follows:

$$k = ((n_H \times 256) + n_L)$$

$$n_H = \text{INT} \frac{k}{256}$$

$$n_L = \text{MOD} \frac{k}{256}$$

**Default**

Control-code data treated as control codes

**Notes**

- This command is available only on printers featuring ESC/P 2.
- The printer ignores data if no character is assigned to that character code in the currently selected character table.

**Printers not featuring this command**

All non-ESC/P 2 printers

**Model-dependent variations**

None

**Related topics**

ESC 6, ESC 7

**Format**

ASCII	ESC	6
Hex	1B	36
Decimal	27	54

**Function**

Tells the printer to treat codes from 128 to 159 as printable characters instead of control codes

**Default**

Codes 128 to 159 are treated as printable characters

**Notes**

- This command has no effect when the italic character table is selected; no characters are defined for these codes in the italic character table.
- This command remains in effect even if you change the character table.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC ( ^, ESC 7

**Format**

ASCII	ESC	6
Hex	1B	36
Decimal	27	54

**Function**

Tells the printer to treat codes from 128 to 159 as printable characters instead of control codes

**Default**

Codes 128 to 159 are treated as control codes

**Notes**

- This command has no effect when the italic character table is selected; no characters are defined for these codes in the italic character table.
- This command remains in effect even if you change the character table.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC I, ESC 7

**Format**

ASCII	ESC	7
Hex	1B	37
Decimal	27	55

**Function**

Tells the printer to treat codes from 128 to 159 as control codes instead of printable characters

**Default**

Codes 128 to 159 are treated as printable codes

**Notes**

This command remains in effect even if you change the character table.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC ( ^, ESC 6

**Format**

ASCII	ESC	7
Hex	1B	37
Decimal	27	55

**Function**

Tells the printer to treat codes from 128 to 159 as control codes instead of printable characters

**Default**

Codes 128 to 159 are treated as control codes

**Notes**

This command remains in effect even if you change the character table.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC 6, ESC I

***Format***

ASCII	ESC	I	n
Hex	1B	49	n
Decimal	27	73	n

***Parameter range***

n = 0, 1

***Function***

- |       |   |
|-------|---|
| n = 1 | Tells the printer to treat codes 0–6, 16, 17, 21–23, 25, 26, 28–31, and 128–159 as printable characters |
| 0     | Tells the printer to treat these codes as unprintable characters  |

***Default***

Codes are treated as control codes

***Notes***

- This command has no effect when the italic character table is selected; no characters are defined for these codes in the italic character table.
- This command remains in effect even if you change the character table.

***Printers not featuring this command***

ActionPrinter Apex 80, ActionPrinter T-1000, ActionPrinter 2000, ActionPrinter 2250, LX-Series printers

***Model-dependent variations***

None

***Related topics***

ESC 6, ESC 7

*Format*

ASCII	ESC	m	n
Hex	1B	6D	n
Decimal	27	109	n

*Parameter range*

n = 0, 4

*Function*

Selects between the following:

- n = 0    Tells the printer to treat codes from 128 to 159 as printable characters
- 4       Tells the printer to treat codes from 128 to 159 as control codes

*Default*

Codes 128 to 159 treated as control codes

*Notes*

- This is a nonrecommended command; use the ESC I, ESC 6, or ESC 7 commands instead, when possible.
- This command has no effect when the italic character table is selected; no characters are defined for these codes in the italic character table.
- This command remains in effect even if you change the character table.

*Printers not featuring this command*

ActionPrinter 2000, ActionPrinter 2250, ActionPrinter 2500, DFX-5000, DFX-5000+, DFX-8000, FX-850, FX-870, FX-1050, FX-1070, LX-100, LX-300, LX-800, LX-810, LX-850, LX-1050, LX-1050+

*Model-dependent variations*

None

*Related topics*

ESC 6, ESC 7, ESC I

**Format**

ASCII	ESC	EM	n
Hex	1B	19	n
Decimal	27	25	n

**Parameter range**

n = 49, 50, 66, 70, 82

**Function**

Controls feeding of continuous and single-sheet paper, according to the parameters below:

n = 49	“1”	Selects loading from bin 1 of the cut-sheet feeder
50	“2”	Selects loading from bin 2 of the cut-sheet feeder
66	“B”	Loads paper from the rear tractor
70	“F”	Loads paper from the front tractor
82	“R”	Ejects one sheet of single-sheet paper

**Notes**

- This command was formerly known as “Control cut-sheet feeder.”
- The former parameters “0” and “4” that control cut-sheet feeder mode are non-recommended, and have been discontinued in ESC/P 2. ESC/P 2 printers do not have a separate cut-sheet feeder mode; the former cut-sheet feeder mode is now integrated into normal printer operation.
- The parameter “R” ejects the currently loaded single-sheet paper without printing data from the line buffer; this is not the equivalent of the FF command (which does print line-buffer data).

**Printers not featuring this command**

None

**Model-dependent variations**

On non-ESC/P 2 printers:

- Only use this command when a cut-sheet feeder is installed.
- The following additional parameters are available:

n = 48	“0”	Exits cut-sheet feeder mode
52	“4”	Enters cut-sheet feeder mode
- However, these parameters are nonrecommended; cut-sheet feeder mode should be selected by DIP switch instead.

**Related topics**

Set the Printing Area

**Format**

ASCII	ESC	EM	n
Hex	1B	19	n
Decimal	27	25	n

**Parameter range**

n = 48, 49, 50, 52, 66, 70, 82

**Function**

Controls feeding of continuous and single-sheet paper, according to the parameters below:

n = 48	“0”	Exits cut-sheet feeder mode
49	“1”	Selects loading from bin 1 of the cut-sheet feeder
50	“2”	Selects loading from bin 2 of the cut-sheet feeder
52	“4”	Enters cut-sheet feeder mode
66	“B”	Loads paper from the rear tractor
70	“F”	Loads paper from the front tractor
82	“R”	Ejects one sheet of single-sheet paper

**Notes**

- This command was formerly known as “Control cut-sheet feeder.”
- The parameters “0” and “4” that control cut-sheet feeder mode are nonrecommended; cut-sheet feeder mode should be selected by DIP switch instead.

**Printers not featuring this command**

DFX-5000, DFX-5000+

**Model-dependent variations**

None

**Related topics**

Set the Printing Area

**Format**

ASCII	ESC	U	n
Hex	1B	55	n
Decimal	27	85	n

**Parameter range**

n = 0, 1, 48, 49

**Function**

Selects bidirectional or unidirectional printing, according to the parameters below:

n = 0 or 48	Bidirectional printing
1 or 49	Unidirectional printing

**Default**

Bidirectional printing (may depend on DIP-switch setting)

**Notes**

- Unidirectional printing provides better alignment of vertical lines, while bidirectional printing is faster.
- If unidirectional is selected by DIP switch, you cannot select bidirectional printing with this command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

Selecting unidirectional print head movement

**Format**

ASCII	ESC	U	n
Hex	1B	55	n
Decimal	27	85	n

**Parameter range**

n = 0, 1, 48, 49

**Function**

Selects bidirectional or unidirectional printing, according to the parameters below:

n = 0 or 48	Bidirectional printing
1 or 49	Unidirectional printing

**Default**

Bidirectional printing (may depend on DIP-switch setting)

**Notes**

- Unidirectional printing provides better alignment of vertical lines, while bidirectional printing is faster.
- If unidirectional is selected by DIP switch, you cannot select bidirectional printing with this command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

Selecting unidirectional print head movement

*Format*

ASCII	ESC	<
Hex	1B	3C
Decimal	27	60

*Function*

Moves the print head to the extreme left position so the next line will print left to right

*Default*

Bidirectional printing (may depend on DIP-switch setting)

*Notes*

This is a nonrecommended command; use the ESC U command instead.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC U

*Format*

ASCII	ESC	<
Hex	1B	3C
Decimal	27	60

*Function*

Moves the print head to the extreme left position so the next line will print left to right

*Default*

Bidirectional printing (may depend on DIP-switch setting)

*Notes*

This is a nonrecommended command; use the ESC U command instead.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC U

**Format**

ASCII	BEL
Hex	07
Decimal	7

**Function**

Sounds the printer's beeper for 1/10 second

**Notes**

This is a nonrecommended command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

***Format***

ASCII	BEL
Hex	07
Decimal	7

***Function***

Sounds the printer's beeper for 1/10 second

***Notes***

This is a nonrecommended command.

***Printers not featuring this command***

None

***Model-dependent variations***

None

*Format*

ASCII	ESC	8
Hex	1B	38
Decimal	27	56

*Function*

- The printer continues printing when the end of the paper is reached.
- No beeper sounds when the end of paper is reached, but the printer sets the PE (printer-error) signal to high and the parallel interface error signal to low.

*Default*

Paper-out detector enabled

*Notes*

This is a nonrecommended command.

*Printers not featuring this command*

DFX-5000, DFX-8000, DFX-5000+

*Model-dependent variations*

None

*Related topics*

ESC 9

*Format*

ASCII	ESC	9
Hex	1B	39
Decimal	27	57

*Function*

- The printer stops printing when the end of the paper is reached
- The beeper sounds when the end of paper is reached, and the printer sets the PE (printer-error) signal to high and the parallel interface error signal to low

*Default*

Paper-out detector is enabled

*Notes*

This is a nonrecommended command.

*Printers not featuring this command*

DFX-5000, DFX-8000, DFX-5000+

*Model-dependent variations*

None

*Related topics*

ESC 8

**Format**

ASCII	ESC	s	n
Hex	1B	73	n
Decimal	27	115	n

**Parameter range**

n = 0, 1, 48, 49

**Function**

Controls printing speed as follows:

n = 0 or 48	Prints at normal speed
1 or 49	Prints at low speed

**Default**

Normal-speed printing

**Notes**

- This is a nonrecommended command.
- This command has been deleted in ESC/P 2.

**Printers not featuring this command**

ActionPrinter L-1000, ActionPrinter 3000, ActionPrinter 4000, ActionPrinter 4500, DLQ-2000, LQ-200, LQ-400, LQ-500, LQ-510, LQ-850, LQ-850+, LQ-860, LQ-860+, LQ-950, LQ-1050, LQ-1050+, LQ-1060, LQ-1060+, LQ-2550, All ESC/P2 printers

**Model-dependent variations**

None

**Format**

ASCII	ESC	s	n
Hex	1B	73	n
Decimal	27	115	n

**Parameter range**

n = 0, 1, 48, 49

**Function**

Controls printing speed as follows:

n = 0 or 48	Prints at normal speed
1 or 49	Prints at low speed

**Default**

Normal-speed printing

**Notes**

This is a nonrecommended command.

**Printers not featuring this command**

DFX-5000, DFX-8000, DFX-5000+

**Model-dependent variations**

None

**Format**

ASCII	ESC	(	G	n <sub>L</sub>	n <sub>H</sub>	m
Hex	1B	28	47	n <sub>L</sub>	n <sub>H</sub>	m
Decimal	27	40	71	n <sub>L</sub>	n <sub>H</sub>	m

**Parameter range**

n<sub>L</sub> = 1  
n<sub>H</sub> = 0  
m = 1, 49

**Function**

Selects graphics mode (allowing you to print raster graphics)

**Notes**

- This command is available only on printers featuring ESC/P 2.
- Exit graphics mode by sending the ESC @ (Initialize printer) command.
- This command clears all user-defined characters and tab settings.
- Text printing is not possible during graphics mode.
- Do not mix text and graphics-mode printing on the same page.
- Only the following commands are available in graphics mode; the printer ignores all other commands:

LF	Line feed
FF	Form feed
CR	Carriage return
ESC EM	Control paper loading/ejecting
ESC @	Initialize printer (exit graphics mode)
ESC .	Print raster graphics
ESC . 2	Enter TIFF compressed mode*
ESC ( i	Select MicroWeave print mode*
ESC ( c	Set page format
ESC ( C	Set page length in defined unit
ESC ( V	Set absolute vertical print position
ESC ( v	Set relative vertical print position
ESC \	Set relative vertical print position
ESC \$	Set absolute horizontal print position
ESC r	Select printing color
ESC U	Turn unidirectional mode on/off
ESC +	Set n/360-inch line spacing
ESC ( U	Set unit

\* The ESC . 2 and ESC ( i commands are available only with the Stylus COLOR and later inkjet printer models.

*Printers not featuring this command*

All non-ESC/P 2 printers

*Model-dependent variations*

None

*Related topics*

ESC ., ESC . 2, ESC ( i, Sending graphics data, Graphics mode, Binary Mode Commands

**Format**

ASCII	ESC	(	i	01	00	n
Hex	1B	28	69	01	00	n
Decimal	27	40	105	01	00	n

**Parameter range**

n = 0, 1, 48, 49

**Function**

Turns MicroWeave print mode off and on:

n = 0 or 48	MicroWeave off
1 or 49	MicroWeave on

**Notes**

- MicroWeave printing takes longer, but improves printout appearance by reducing banding.
- This command is only available during raster graphics printing.
- Sending an ESC @ or ESC ( G command turns MicroWeave printing off.
- Always send this command before loading paper

**Printers featuring this command**

Stylus COLOR

**Model-dependent variations**

None

**Related topics**

ESC ., ESC . 2, ESC ( G, ESC @, Sending graphics data, Graphics mode

**Format**

ASCII	ESC	.	c	v	h	m	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Hex	1B	2E	c	v	h	m	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Decimal	27	46	c	v	h	m	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>

**Parameter range**

- c = 0
- c = 1
- v = 5, 10, 20
- h = 5, 10, 20
- m = 1, 8, 24
- 0 ≤ n<sub>L</sub> ≤ 255
- 0 ≤ n<sub>H</sub> ≤ 127
- 0 ≤ d ≤ 255

The following vertical and horizontal printing resolution combinations are available:

v	h	v (dpi)	h (dpi)	m
20	20	180	180	1, 8, or 24
20	20	180	360	1, 8, or 24
10	10	360	360	1, 8, or 24

**Stylus COLOR only**

5	5	720	720	1 (with speical paper)
---	---	-----	-----	------------------------

**Function**

- Prints dot graphics in raster format (row by row, left to right)
- Allows compression of graphics data during raster graphics printing; counters can be included with data to specify the number of times to repeat a particular byte of data
- Parameters are used as described below:

- c = 0 Full graphics mode (noncompressed)
- 1 Compressed raster graphics (Run Length Encoding) mode
- v Vertical resolution in dpi—720, 360, 180 (3600/v dpi)
- h Horizontal resolution in dpi—720, 360, 180 (3600/h dpi)
- m Vertical dot count (rows of dot graphics)
- n<sub>L</sub>, n<sub>H</sub> Horizontal dot count (columns of dot graphics), according to the following formula:

$$n_H = \text{INT} \frac{(\text{horizontal dot count})}{256}$$

$$n_L = \text{MOD} \frac{(\text{horizontal dot count})}{256}$$

k Total number of data bytes, according to the following formula:

$$k = m \times \text{INT} \frac{(n_H \times 256) + n_L + 7}{8}$$

d *During full graphics mode:*  
Graphics data

*During RLE compressed raster graphics mode (ESC . 1):*

The first data byte is treated as a counter. Graphics data bytes then alternate with a data counter byte (run-length data compression), as follows:

$$0 \leq (\text{counter byte}) \leq 127$$

Counter specifies the number of data bytes following according to the formula below.

$$(\text{counter byte}) + 1 = (\text{number of data bytes to follow}) \text{ or}$$

$$(\text{counter byte}) = (\text{number of data bytes to follow}) - 1$$

$$128 \leq (\text{counter byte}) \leq 255$$

Counter specifies the number of times to repeat the next byte of data according to the formula below.

$$256 - (\text{counter byte}) + 1 = (\text{number of times to repeat next byte})$$

$$(\text{counter byte}) = 257 - (\text{number of times to repeat next byte})$$

## Notes

- Use only one image density and do not change this setting once in raster graphics mode.
- Parameters in bold are new to this command and apply to the Stylus COLOR and later printer models.
- When MicroWeave is selected, the image height *m* must be set to 1.
- Special coated stock paper available from EPSON is required when printing raster graphics at 720 dpi.
- This command is available only on printers featuring ESC/P 2.
- This command can be used only during graphics mode, entered by sending the ESC ( G command.
- The combination of *v* = 10 and *h* = 20 (360 dpi by 180 dpi) is not possible.
- You can specify the horizontal dot count in 1-dot increments. If the dot count is not a multiple of 8, the remaining data in the data byte at the far right of each row is ignored.
- The final print position is the dot after the far right dot on the top row of the graphics printed with this command.
- Repetitive data bytes can be mixed with data blocks in the same command.
- You cannot move the print position in a negative direction (up) while in graphics mode. Also, the printer ignores commands moving the vertical print position in a negative direction if the final position would be above any graphics printed with this command.

- Print data that exceeds the right margin is ignored.
- Do not specify the vertical movement in increments smaller than the current print density.

*Printers not featuring this command*

All non-ESC/P 2 printers

*Model-dependent variations*

Vertical and horizontal resolutions of 720 dpi are available only with the Stylus COLOR.

*Related topics*

ESC ( G, Sending graphics data, Raster graphics

**Format**

ASCII	ESC	.	2	v	h	1	0	0
Hex	1B	2E	2	v	h	1	0	0
Decimal	27	46	2	v	h	1	0	0

**Parameter range**

v = 5,10, 20	vertical resolutions in dpi—720, 360, 180 (3600/v dpi)
h = 5,10, 20	horizontal resolutions in dpi—720, 360, 180 (3600/h dpi)

The following vertical and horizontal printing resolution combinations are available:

v	h	v (dpi)	h (dpi)
20	20	180	180
20	10	180	360
10	10	360	360

**Stylus COLOR only**

5	5	720	720 (with special paper)
---	---	-----	--------------------------

**Function**

- Enters TIFF raster graphics compressed mode
- The following commands are available in TIFF mode (all other codes are ignored):

<XFER>	Transfer raster graphics data
<MOVX>	Set relative horizontal position
<MOVY>	Set relative vertical position
<COLR>	Select printing color
<CR>	Carriage return to left-most print position
<EXIT>	Exit TIFF mode
<MOVXBYTE>	Set <MOVX> unit to 8 dots
<MOVXDOT>	Set <MOVX> unit to 1 dot

- This mode allows compression of graphics data during raster graphics printing.

**Notes**

- This command can be used only during graphics mode, which is entered by sending the ESC ( G command).
- This command pertains only to Stylus COLOR and later printer models.
- Use only one image density and do not change this setting after entering raster graphics mode.
- Do not overwrite image data.
- The horizontal positioning should be a multiple of 8, otherwise the printer's throughput will decline.
- The combination of v = 10 and h = 20 (360 vertical dots by 180 horizontal dots) is not possible.

- Special coated stock paper available from EPSON is required when printing raster graphics at 720 dpi.
- Do not specify the vertical movement in increments smaller than the current print density.

*Printers featuring this command*

Stylus COLOR

*Model-dependent variations*

None

*Related topics*

ESC ., ESC ( G, ESC @, Sending graphics data, Graphics mode, Binary Mode Commands

**Format**

ASCII	ESC	*	m	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	...	d <sub>k</sub>
Hex	1B	2A	m	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	...	d <sub>k</sub>
Decimal	27	42	m	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	...	d <sub>k</sub>

**Parameter range**

$$0 \leq n_L \leq 255$$

$$0 \leq n_H \leq 31$$

$$m = 0, 1, 2, 3, 4, 6, 32, 33, 38, 39, 40, 71, 72, 73$$

**Function**

Prints dot-graphics in 8, 24, or 48-dot columns, depending on the following parameters:

- m** Specifies the dot density (see table below)  
**n<sub>L</sub>, n<sub>H</sub>** Specifies the total number of columns of graphics data that follow

$$(\text{number of dot columns}) = ((n_H \times 256) + n_L)$$

$$n_H = \text{INT} \frac{(\text{number of dot columns})}{256}$$

$$n_L = \text{MOD} \frac{(\text{number of dot columns})}{256}$$

- d<sub>1</sub> ... d<sub>k</sub>** Bytes of graphics data; k is determined by multiplying the total number of columns times the number of bytes required for each column (see the table below)

### *Dot density*

Parameter m in ESC * command	Horizontal density (dpi)	Vertical density (dpi)		Adjacent dot printing	Dots per column	Bytes per column
		24 pin	48 pin			
0	60	60	60	Yes	8	1
1	120	60	60	Yes	8	1
2	120	60	60	No	8	1
3	240	60	60	No	8	1
4	80	60	60	Yes	8	1
6	90	60	60	Yes	8	1
32	60	180	180	Yes	24	3
33	120	180	180	Yes	24	3
38	90	180	180	Yes	24	3
39	180	180	180	Yes	24	3
40	360	180	180	No	24	3
71	180	N/A	360	Yes	48	6
72	360	N/A	360	No	48	6
73	360	N/A	360	Yes	48	6

### *Notes*

- Not all values for m are available on all printers; see the Command Table for a list of which values are available on your printer.
- Printing 48-dot columns is available only on 48-dot printers.

### *Printers not featuring this command*

None

### *Model-dependent variations*

ActionPrinter 3000, ActionPrinter 4000, ActionPrinter 4500, LQ-510, LQ-550, LQ-850, LQ-850+, LQ-860, LQ-860+, LQ-950, LQ-1010, LQ-1050, LQ-1050+, LQ-1060, LQ-1060+, LQ-2550, and all ESC/P 2 printers

A vertical print density of 360 dpi can be achieved on 24-pin printers that feature the ESC + command. Advance the paper 1/360 inch (using the ESC + command) and then overprint the previous graphics line.

### *Related topics*

Sending graphics data, Bit-image graphics

**Format**

ASCII	ESC	*	m	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	...	d <sub>k</sub>
Hex	1B	2A	m	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	...	d <sub>k</sub>
Decimal	27	42	m	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	...	d <sub>k</sub>

**Parameter range**

- 0 ≤ n<sub>L</sub> ≤ 255
- 0 ≤ n<sub>H</sub> ≤ 31
- m = 0, 1, 2, 3, 4, 5, 6, 7

**Function**

Prints dot-graphics in 8-dot columns, depending on the following parameters:

- m Specifies the dot density (see table below)
- n<sub>L</sub>, n<sub>H</sub> Specify the total number of columns (k) of graphics data following, according to the formula

$$\begin{aligned}
 &(\text{number of dot columns}) = ((n_H \times 256) + n_L) \\
 n_H &= \text{INT} \frac{(\text{number of dot columns})}{256} \\
 n_L &= \text{MOD} \frac{(\text{number of dot columns})}{256}
 \end{aligned}$$

d<sub>1</sub> . . . d<sub>k</sub> Bytes of graphics data

*Dot density*

Parameter m in ESC * command	Horizontal density	Vertical density	Adjacent dot printing	Dots per column	Bytes per column
0	60	72	Yes	8	1
1	120	72	Yes	8	1
2	120	72	No	8	1
3	240	72	No	8	1
4	80	72	Yes	8	1
5	72	72	Yes	8	1
6	90	72	Yes	8	1
7	144	72	Yes	8	1

**Notes**

- Graphics data that would print beyond the right-margin position is ignored.
- Bit-image graphics can be printed on the same line as text.
- Not all values for m are available on all printers; see the Command Table for a list of which values are available on your printer.

*Printers not featuring this command*

None

*Model-dependent variations*

ActionPrinter Apex 80, ActionPrinter T-1000, ActionPrinter 2000, ActionPrinter 2250, LX-100, LX-300, LX-400, LX-800, LX-810, LX-850, LX-1050, LX-1050+

Parameter 7 (144 dot horizontal density) is not available.

*Related topics*

Sending graphics data, Bit-image graphics

**Format**

ASCII	ESC	?	n	m
Hex	1B	3F	n	m
Decimal	27	63	n	m

**Parameter range**

n = 75, 76, 89, 90

m = 0, 1, 2, 3, 4, 6, 32, 33, 38, 39, 40, 71, 72, 73

**Function**

Assigns the dot density used during the ESC K, ESC L, ESC Y, or ESC Z commands to the density specified by parameter m in the ESC \* command

**Default**

ESC K is assigned density 0

ESC L is assigned density 1

ESC Y is assigned density 2

ESC Z is assigned density 3

**Notes**

- This is a nonrecommended command; use the ESC \* command to print graphics rather than the ESC K, ESC L, ESC Y, or ESC Z commands.
- Bit-image modes that handle data in 48-dot columns can only be printed on 48-dot printers.

**Printers not featuring this command**

None

**Model-dependent variations**

See the Command Table for the m values that can be reassigned in each printer model.

**Related topics**

ESC \*

**Format**

ASCII	ESC	?	n	m
Hex	1B	3F	n	m
Decimal	27	63	n	m

**Parameter range**

n = 75, 76, 89, 90

m = 0, 1, 2, 3, 4, 5, 6, 7

**Function**

Assigns the dot density used during the ESC K, ESC L, ESC Y, or ESC Z commands to the density specified by parameter m in the ESC \* command

**Default**

ESC K is assigned density 0

ESC L is assigned density 1

ESC Y is assigned density 2

ESC Z is assigned density 3

**Notes**

This is a nonrecommended command; use the ESC \* command to print graphics rather than the ESC K, ESC L, ESC Y, or ESC Z commands.

**Printers not featuring this command**

None

**Model-dependent variations**

See the Command Table for the m values that can be reassigned in each printer model.

**Related topics**

ESC \*

**Format**

ASCII	ESC	K	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Hex	1B	4B	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Decimal	27	75	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>

**Parameter range**

$$0 \leq n_L \leq 255$$

$$0 \leq n_H \leq 31$$

$$0 \leq d \leq 255$$

**Function**

Prints bit-image graphics in 8-dot columns, at a density of 60 horizontal by 60 vertical dpi, according to the following parameters:

n<sub>L</sub>, n<sub>H</sub> Specify the total number of columns (k) of graphics data following, according to the formula

$$k = ((n_H \times 256) + n_L)$$

$$n_H = \text{INT} \frac{k}{256}$$

$$n_L = \text{MOD} \frac{k}{256}$$

d<sub>1</sub> . . . d<sub>k</sub> Bytes of graphics data

**Notes**

- This is a nonrecommended command. The ESC \* 0 command is identical to this command; use ESC \* 0 instead of this command.
- The dot density printed with this command can be redefined with the ESC ? command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC \*

**Format**

ASCII	ESC	K	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Hex	1B	4B	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Decimal	27	75	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>

**Parameter range**

$$0 \leq n_L \leq 255$$

$$0 \leq n_H \leq 31$$

$$0 \leq d \leq 255$$

**Function**

Prints bit-image graphics in 8-dot columns, at a density of 60 horizontal by 72 vertical dpi, according to the following parameters:

n<sub>L</sub>, n<sub>H</sub> Specify the total number of columns (k) of graphics data following, according to the formula

$$k = ((n_H \times 256) + n_L)$$

$$n_H = \text{INT} \frac{k}{256}$$

$$n_L = \text{MOD} \frac{k}{256}$$

d<sub>1</sub> . . . d<sub>k</sub> Bytes of graphics data

**Notes**

- This is a nonrecommended command. The ESC \* 0 command is identical to this command; use ESC \* 0 instead of this command.
- The dot density printed with this command can be redefined with the ESC ? command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC \*

**Format**

ASCII	ESC	L	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Hex	1B	4C	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Decimal	27	76	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>

**Parameter range**

$$0 \leq n_L \leq 255$$

$$0 \leq n_H \leq 31$$

$$0 \leq d \leq 255$$

**Function**

Prints bit-image graphics in 8-dot columns, at a density of 120 horizontal by 60 vertical dpi, according to the following parameters:

n<sub>L</sub>, n<sub>H</sub> Specify the total number of columns (k) of graphics data following, according to the formula

$$k = ((n_H \times 256) + n_L)$$

$$n_H = \text{INT} \frac{k}{256}$$

$$n_L = \text{MOD} \frac{k}{256}$$

d<sub>1</sub> . . . d<sub>k</sub> Bytes of graphics data

**Notes**

- This is a nonrecommended command. The ESC \* 1 command is identical to this command; use ESC \* 1 instead of this command.
- The dot density printed with this command can be redefined with the ESC ? command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC \*

**Format**

ASCII	ESC	L	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Hex	1B	4C	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Decimal	27	76	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>

**Parameter range**

$$0 \leq n_L \leq 255$$

$$0 \leq n_H \leq 31$$

$$0 \leq d \leq 255$$

**Function**

Prints bit-image graphics in 8-dot columns, at a density of 120 horizontal by 72 vertical dpi, according to the following parameters:

n<sub>L</sub>, n<sub>H</sub> Specify the total number of columns (k) of graphics data following, according to the formula

$$k = ((n_H \times 256) + n_L)$$

$$n_H = \text{INT} \frac{k}{256}$$

$$n_L = \text{MOD} \frac{k}{256}$$

d<sub>1</sub> . . . d<sub>k</sub> Bytes of graphics data

**Notes**

- This is a nonrecommended command. The ESC \* 1 command is identical to this command; use ESC \* 1 instead of this command.
- The dot density printed with this command can be redefined with the ESC ? command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC \*

**Format**

ASCII	ESC	Y	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Hex	1B	59	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Decimal	27	89	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>

**Parameter range**

$$0 \leq n_L \leq 255$$

$$0 \leq n_H \leq 31$$

$$0 \leq d \leq 255$$

**Function**

Prints bit-image graphics in 8-dot columns, at a density of 120 horizontal by 60 vertical dpi, according to the following parameters:

n<sub>L</sub>, n<sub>H</sub> Specify the total number of columns (k) of graphics data following, according to the formula

$$k = (n_H \times 256) + n_L$$

$$n_H = \text{INT} \frac{k}{256}$$

$$n_L = \text{MOD} \frac{k}{256}$$

d<sub>1</sub> . . . d<sub>k</sub> Bytes of graphics data

**Notes**

- This is a nonrecommended command. The ESC \* 2 command is identical to this command; use ESC \* 2 instead of this command.
- The speed is double because consecutive horizontal dots cannot be printed; the printer ignores the second continuous horizontal dot.
- The dot density printed with this command can be redefined with the ESC ? command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC \*

**Format**

ASCII	ESC	Y	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Hex	1B	59	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Decimal	27	89	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>

**Parameter range**

$$0 \leq n_L \leq 255$$

$$0 \leq n_H \leq 31$$

$$0 \leq d \leq 255$$

**Function**

Prints bit-image graphics in 8-dot columns, at a density of 120 horizontal by 72 vertical dpi, according to the following parameters:

n<sub>L</sub>, n<sub>H</sub> Specify the total number of columns (k) of graphics data following, according to the formula

$$k = ((n_H \times 256) + n_L)$$

$$n_H = \text{INT} \frac{k}{256}$$

$$n_L = \text{MOD} \frac{k}{256}$$

d<sub>1</sub> . . . d<sub>k</sub> Bytes of graphics data

**Notes**

- This is a nonrecommended command. The ESC \* 2 command is identical to this command; use ESC \* 2 instead of this command.
- The speed is double because consecutive horizontal dots cannot be printed; the printer ignores the second continuous horizontal dot.
- The dot density printed with this command can be redefined with the ESC ? command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC \*

**Format**

ASCII	ESC	Z	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Hex	1B	5A	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Decimal	27	90	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>

**Parameter range**

$$0 \leq n_L \leq 255$$

$$0 \leq n_H \leq 31$$

$$0 \leq d \leq 255$$

**Function**

Prints bit-image graphics in 8-dot columns, at a density of 240 horizontal by 60 vertical dpi, according to the following parameters:

n<sub>L</sub>, n<sub>H</sub>      Specify the total number of columns (k) of graphics data following, according to the formula

$$k = (n_H \times 256) + n_L$$

$$n_H = \text{INT} \frac{k}{256}$$

$$n_L = \text{MOD} \frac{k}{256}$$

d<sub>1</sub> . . . d<sub>k</sub>      Bytes of graphics data

**Notes**

- This is a nonrecommended command. The ESC \* 3 command is identical to this command; use ESC \* 3 instead of this command.
- The speed is double because consecutive horizontal dots cannot be printed; the printer ignores the second continuous horizontal dot.
- The dot density printed with this command can be redefined with the ESC ? command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC \*

**Format**

ASCII	ESC	Z	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Hex	1B	5A	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>
Decimal	27	90	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	d <sub>2</sub>	...	d <sub>k</sub>

**Parameter range**

$$0 \leq n_L \leq 255$$

$$0 \leq n_H \leq 31$$

$$0 \leq d \leq 255$$

**Function**

Prints bit-image graphics in 8-dot columns, at a density of 240 horizontal by 72 vertical dpi, according to the following parameters:

n<sub>L</sub>, n<sub>H</sub> Specify the total number of columns (k) of graphics data following, according to the formula

$$k = (n_H \times 256) + n_L$$

$$n_H = \text{INT} \frac{k}{256}$$

$$n_L = \text{MOD} \frac{k}{256}$$

d<sub>1</sub> . . . d<sub>k</sub> Bytes of graphics data

**Notes**

- This is a nonrecommended command. The ESC \* 3 command is identical to this command; use ESC \* 3 instead of this command.
- The speed is double because consecutive horizontal dots cannot be printed; the printer ignores the second continuous horizontal dot.
- The dot density printed with this command can be redefined with the ESC ? command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC \*

**Format**

ASCII	ESC	^	m	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	...	d <sub>k</sub>
Hex	1B	5E	m	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	...	d <sub>k</sub>
Decimal	27	94	m	n <sub>L</sub>	n <sub>H</sub>	d <sub>1</sub>	...	d <sub>k</sub>

**Parameter range**

- 0 ≤ n<sub>L</sub> ≤ 255
- 0 ≤ n<sub>H</sub> ≤ 31
- m = 0, 1

**Function**

Prints dot-graphics in 9-dot columns, depending on the following parameters:

- m Specifies the dot density (see table below)
- n<sub>L</sub>, n<sub>H</sub> Specify the total number of graphics data bytes (two bytes per column)

$$\begin{aligned} \text{(number of dot columns)} &= ((n_H \times 256) + n_L) \\ n_H &= \text{INT} \frac{\text{(number of dot columns)}}{256} \\ n_L &= \text{MOD} \frac{\text{(number of dot columns)}}{256} \end{aligned}$$

d<sub>1</sub> . . . d<sub>k</sub> Bytes of graphics data

*Dot density*

Parameter m	Horizontal density (dpi)	Vertical density (dpi)	Adjacent dot printing	Dots per column	Bytes per column
0	60	72	Yes	9	2
1	120	72	Yes	9	2

Each dot column requires two bytes of data. The first byte represents the top 8 dots in the print head. Bit 0 (the LSB) in the second byte represents the ninth (bottom) dot in the print head; the remaining 7 bits are ignored.

**Notes**

- This is a nonrecommended command; use the ESC \* command instead.
- Graphics data that would print beyond the right-margin position is ignored.
- Bit-image graphics can be printed on the same line as text.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC \*

**Format**

ASCII	ESC	r	n
Hex	1B	72	n
Decimal	27	114	n

**Parameter range**

$$0 \leq n \leq 6$$

**Function**

Selects the color of printing, according to the parameters below:

n = 0	Black
1	Magenta
2	Cyan
3	Violet
4	Yellow
5	Red
6	Green

**Default**

n = 0 (Black)

**Notes**

- The printer ignores this command if color printing is not available.
- Print yellow first when overlapping colors.
- Only black, magenta, cyan, and yellow are available during graphics mode selected with the ESC ( G command).

**Printers not featuring this command**

ActionPrinter L-1000, ActionPrinter 3000, ActionPrinter 3250, ActionPrinter 4000, ActionPrinter 5000, ActionPrinter 5500, DLQ-3000, LQ-100, LQ-200, LQ-400, LQ-500, LQ-510, LQ-550, LQ-570, LQ-570+, LQ-670, LQ-850, LQ-850+, LQ-870, LQ-950, LQ-1010, LQ-1050, LQ-1050+, LQ-1070, LQ-1070+, LQ-1170, LQ-2070, LQ-2170, SQ-870, SQ-1170, SQ-2550, TLQ-4800, TSQ-4800, Stylus 300, Stylus 800, Stylus 800+, Stylus 1000, Stylus 400

**Model-dependent variations**

None

**Related topics**

<COLR>, Selecting print color

***Format***

ASCII	ESC	r	n
Hex	1B	72	n
Decimal	27	114	n

***Parameter range***

$$0 \leq n \leq 6$$

***Function***

Selects the color of printing, according to the parameters below:

n = 0	Black
1	Magenta
2	Cyan
3	Violet
4	Yellow
5	Red
6	Green

***Default***

n = 0 (Black)

***Notes***

- The printer ignores this command if color printing is not available.
- Print yellow first when overlapping colors.

***Printers not featuring this command***

ActionPrinter Apex 80, ActionPrinter T-750, ActionPrinter T-1000, ActionPrinter 2000, ActionPrinter 2250, ActionPrinter 2500, DFX-5000, DFX-5000+, DFX-8000, FX-850, FX-870, FX-1050, FX-1170, FX-2170, LX-100, LX-400, LX-800, LX-810, LX-850, LX-1050, LX-1050+

***Model-dependent variations***

None

***Related topics***

Selecting print color

**Format**

ASCII	ESC	(	B	n <sub>L</sub>	n <sub>H</sub>	k	m	s	v <sub>1</sub>	v <sub>2</sub>	c	BarCodeData
Hex	1B	28	42	n <sub>L</sub>	n <sub>H</sub>	k	m	s	v <sub>1</sub>	v <sub>2</sub>	c	BarCodeData
Decimal	27	40	66	n <sub>L</sub>	n <sub>H</sub>	k	m	s	v <sub>1</sub>	v <sub>2</sub>	c	BarCodeData

**Parameter range**

- 0 ≤ n<sub>L</sub> ≤ 255
- 0 ≤ n<sub>H</sub> ≤ 127
- 0 ≤ k ≤ 7
- 2 ≤ m ≤ 5
- 3 ≤ s ≤ 3
- 0 ≤ v<sub>1</sub> ≤ 255
- 0 ≤ v<sub>2</sub> ≤ 127
- 0 ≤ c ≤ 255

**Function**

- Prints bar codes.
- Parameters are used as described below:

n<sub>L</sub>, n<sub>H</sub> Total number of data bytes to follow, determined by the following equation:

$$(\text{number of data bytes}) = 6 \text{ bytes} + \text{BarCodeData bytes} = ((n_H \times 256) + n_L)$$

(where 6 bytes are k, m, s, v<sub>1</sub>, v<sub>2</sub>, and c)

$$n_H = \text{INT} \frac{(\text{number of data bytes})}{256}$$

$$n_L = \text{MOD} \frac{(\text{number of data bytes})}{256}$$

k Bar code type

k (Hex)	Bar code type
00	EAN-13
01	EAN-8
02	Interleaved 2 of 5
03	UPC-A
04	UPC-E
05	Code 39
06	Code 128
07	POSTNET

m Module width

m	24-pin printer (unit 1/180 inch)	9-pin printer (unit 1/120 inch)
02 (default)	2 dots	2 dots
03	3 dots	3 dots
04	4 dots	4 dots
05	5 dots	5 dots

s Space adjustment value

24-pin printer	$-3 \leq s \leq 3$ (unit 1/360 inch)
9-pin printer	$-3 \leq s \leq 3$ (unit 1/240 inch)

v<sub>1</sub>, v<sub>2</sub> Bar length

24-pin printer	bar length = $v_1 + v_2 \times 256$ (unit 1/180 inch)
9-pin printer	bar length = $v_1 + v_2 \times 256$ (unit 1/72 inch)

The v<sub>1</sub> and v<sub>2</sub> values are ignored when POSTNET is selected.

Long bar length of POSTNET is always 0.125 inch.

Short bar length of POSTNET is always 0.050 inch.

c Control flag

c	Control flag
bit 0	Check digit 0: A check digit is not added by the printer. 1: A check digit is added by the printer.
bit 1	Human readable character 0: The human readable characters are added by the printer. 1: The human readable characters are not added by the printer.
bit 2	Position of flag character (for EAN-13 and UPC-A only) 0: Center 1: Under
bit 3	(reserved)
bit 4	(reserved)
bit 5	(reserved)
bit 6	(reserved)
bit 7	(reserved)

BarCodeData Corresponds to the bar code symbology.

The data number of each bar code type is constant.

The bar code is not printed if the number of bar code characters are incorrect.

Bar code type	Number of valid characters 1 (HEX)	Number of valid characters 2 (HEX)
EAN-13	0D	0C
EAN-8	08	07
Interleaved 2 of 5	02 to FF	02 to FF
UPC-A	0C	0B
UPC-E	0C or 8	0B or 7
Code 39	01 to FF	01 to FF
Code 128	02 to FF	02 to FF
POSTNET	06 or 0A or 0C	05 or 09 or 0B

Number of valid characters 1: control flag c bit 0 = 0

Number of valid characters 2: control flag c bit 0 = 1

The valid data of each bar code type are following.

If an invalid data is included in the BarCodeData string, the bar code is not printed.

Bar code type	Valid range of BarCodeData
EAN-13	0-9 (30H-39H)
EAN-8	0-9 (30H-39H)
Interleaved 2 of 5	0-9 (30H-39H)
UPC-A	0-9 (30H-39H)
UPC-E	0-9 (30H-39H)
Code 39	0-9 (30H-39H), (41H-5AH) (20H, 24H, 25H, 2BH, 2DH, 2EH, 2FH)
Code 128	Code Set A, Set B, Set C
POSTNET	0-9 (30H-39H)

### Notes

- Bar code printing is always performed unidirectionally.
- The bar code is not printed when part of the bar code is out of the right margin.
- Bar code and text data are mixed in a line.
- A kind of Code 128 character sets (A, B or C) is identified by the first data of Code 128. The first data must be a hexadecimal 41 (A), 42 (B) and 43 (C).
- When Code 128 Character Set C and Interleaved 2 of 5 is selected and the number of characters are ODD, "0" is added to the data string.

### Printers featuring this command

DLQ-3000 ('96 ~), LQ-670, LQ-2070, LQ-2170

### Model-dependent variations

None

### Related topics

ESC <, ESC Q, ESC U, Printing Bar Codes

**Format**

ASCII	ESC	@
Hex	1B	40
Decimal	27	64

**Function**

Resets the printer to its default settings

**Notes**

- This command does not affect user-defined characters or control panel (SelectType) settings.
- See each command explanation, for the settings after the ESC @ command is received.
- Use this command to exit graphics mode entered with the ESC ( G command.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

Recommended command order

**Format**

ASCII	ESC	@
Hex	1B	40
Decimal	27	64

**Function**

Resets the printer to its default settings

**Notes**

- This command does not affect user-defined characters or control panel (SelectType) settings
- See each command explanation for the settings after the ESC @ command is received.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

Recommended command order

**Format**

ASCII	CAN
Hex	18
Decimal	24

**Function**

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

**Notes**

- This is a nonrecommended command.
- This command does not affect (clear) control codes.

**Printers not featuring this command**

None

**Model-dependent variations**

None

*Format*

ASCII	CAN
Hex	18
Decimal	24

*Function*

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

*Notes*

- This is a nonrecommended command.
- This command does not affect (clear) control codes.

*Printers not featuring this command*

None

*Model-dependent variations*

None

**Format**

ASCII	DEL
Hex	7F
Decimal	127

**Function**

Deletes the last printable character in the print buffer's current line

**Notes**

- This is a nonrecommended command.
- This command only deletes printable characters; printer control codes are not affected.
- The printer ignores this command if it follows a command that moves the horizontal print position (ESC \$, ESC \, or HT)

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Format**

ASCII	DEL
Hex	7F
Decimal	127

**Function**

Deletes the last printable character in the print buffer's current line

**Notes**

- This is a nonrecommended command.
- This command only deletes printable characters; printer control codes are not affected.
- The printer ignores this command if it follows a command that moves the horizontal print position (ESC \$, ESC \, or HT)

**Printers not featuring this command**

None

**Model-dependent variations**

None

*Format*

ASCII	DC1
Hex	11
Decimal	17

*Function*

Selects the printer after it has been deselected with the DC3 command

*Default*

Printer is selected.

*Notes*

- This is a nonrecommended command. The SLCT IN signal on the interface must be high to use this command. This command is nearly always unnecessary.
- The printer ignores this command if the user has set the printer off line by pressing the on-line button.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Format*

ASCII	DC1
Hex	11
Decimal	17

*Function*

Selects the printer after it has been deselected with the DC3 command

*Default*

Printer is selected.

*Notes*

- This is a nonrecommended command. The SLCT IN signal on the interface must be high to use this command. This command is nearly always unnecessary.
- The printer ignores this command if the user has set the printer off line by pressing the on-line button.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Format*

ASCII	DC3
Hex	13
Decimal	19

*Function*

Deselects the printer

*Default*

Printer is selected

*Notes*

- This is a nonrecommended command. The SLCT IN signal on the interface must be high to use this command. This command is nearly always unnecessary.
- The printer remains deselected until it receives a DC1 command, or power is turned off then on again. The printer ignores the ESC @ command (initialize printer) when it is deselected.
- The printer cannot be reselected by pressing the on-line button.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Format*

ASCII	DC3
Hex	13
Decimal	19

*Function*

Deselects the printer

*Default*

Printer is selected

*Notes*

- This is a nonrecommended command. The SLCT IN signal on the interface must be high to use this command. This command is nearly always unnecessary.
- The printer remains deselected until it receives a DC1 command, or power is turned off then on again. The printer ignores the ESC @ command (initialize printer) when it is deselected.
- The printer cannot be reselected by pressing the on-line button.

*Printers not featuring this command*

None

*Model-dependent variations*

None

**Format**

ASCII	ESC	#
Hex	1B	23
Decimal	27	35

**Function**

Cancels any controls on the MSB (bit number 7) set by the ESC = or ESC > commands; printer then accepts all MSB data as is

**Default**

No MSB control

**Notes**

This is a nonrecommended command; most computer systems no longer require MSB control.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC =, ESC >

**Format**

ASCII	ESC	#
Hex	1B	23
Decimal	27	35

**Function**

Cancels any controls on the MSB (bit number 7) set by the ESC = or ESC > commands; printer then accepts all MSB data as is

**Default**

No MSB control

**Notes**

This is a nonrecommended command; most computer systems no longer require MSB control.

**Printers not featuring this command**

ActionPrinter Apex 80, ActionPrinter T-1000, ActionPrinter 2000, ActionPrinter 2250, LX-100, LX-300, LX-400, LX-800, LX-810, LX-850, LX-1050, T-1000

**Model-dependent variations**

None

**Related topics**

ESC =, ESC >

**Format**

ASCII	ESC	=
Hex	1B	3D
Decimal	27	61

**Function**

Sets the MSB (bit number 7) of all incoming data to 0

**Default**

No MSB control

**Notes**

- This is a nonrecommended command; most computer systems no longer require MSB control.
- All data is affected, including graphics data.

**Printers not featuring this command**

None

**Model-dependent variations**

None

**Related topics**

ESC #, ESC >

**Format**

ASCII	ESC	=
Hex	1B	3D
Decimal	27	61

**Function**

Sets the MSB (bit number 7) of all incoming data to 0

**Default**

No MSB control

**Notes**

- This is a nonrecommended command; most computer systems no longer require MSB control.
- All data is affected, including graphics data.

**Printers not featuring this command**

ActionPrinter Apex 80, ActionPrinter T-1000, ActionPrinter 2000, ActionPrinter 2250, LX-100, LX-300, LX-400 LX-800, LX-810, LX-850, LX-1050

**Model-dependent variations**

None

**Related topics**

ESC #, ESC >

*Format*

ASCII	ESC	>
Hex	1B	3E
Decimal	27	62

*Function*

Sets the MSB (bit number 7) of all incoming data to 1

*Default*

No MSB control

*Notes*

- This is a nonrecommended command; most computer systems no longer require MSB control.
- All data is affected, including graphics data.

*Printers not featuring this command*

None

*Model-dependent variations*

None

*Related topics*

ESC =, ESC #

*Format*

ASCII	ESC	>
Hex	1B	3E
Decimal	27	62

*Function*

Sets the MSB (bit number 7) of all incoming data to 1

*Default*

No MSB control

*Notes*

- This is a nonrecommended command; most computer systems no longer require MSB control.
- All data is affected, including graphics data.

*Printers not featuring this command*

ActionPrinter Apex 80, ActionPrinter T-1000, ActionPrinter 2000, ActionPrinter 2250, LX-100, LX-300, LX-400, LX-800, LX-810, LX-850, LX-1050

*Model-dependent variations*

None

*Related topics*

ESC =, ESC #

*Format*

ASCII	ESC	j	n
Hex	1B	6A	n
Decimal	27	106	n

*Parameter range*

0 ≤ n ≤ 255

*Function*

- Reverse feeds paper (moves the print position in the negative direction) n/216 inch
- Prints any data in the buffer

*Default*

None

*Notes*

- This is a deleted command.
- Do not reverse-feed paper more than 1/2 inch; the vertical print position may not be accurate otherwise.

*Printers featuring this command*

Only these printers feature this command: EX-800, EX-1000, FX-80, FX-85, FX-100, FX-185, FX-286, JX-80

*Model-dependent variations*

None

*Related topics*

CR, LF, Moving the vertical position

**Format**

ASCII	ESC	i	n
Hex	1B	69	n
Decimal	27	105	n

**Parameter range**

n = 0, 1

**Function**

Switches between character and line printing, as follows:

- n = 1      Prints data on a character by character basis  
            If no print data is sent for a short period, moves the vertical print position so that all print is visible
- 0          Prints data on a line by line basis

**Default**

Printing on a line by line basis

**Notes**

This is a deleted command.

**Printers featuring this command**

Only these printers feature this command: EX-800, EX-1000, FX-80, FX-85, FX-100, FX-185, FX-286, JX-80

**Model-dependent variations**

None

## Binary Mode Commands

To accommodate the high-resolution printing capabilities of the Stylus COLOR printer, EPSON has added a raster graphics data compression mode to the existing ESC/P 2 graphics command set: ESC . 2 TIFF compression. This new compression mode also required the introduction of a set of binary commands. For detailed information on programming in compressed raster graphics mode, see the discussion in Recommended Operations.

Binary commands are available only when a compressed raster graphics mode is selected with the ESC . 2 command. In this mode the band height *m* is always set to 1. The binary commands applicable to the TIFF compression mode are listed below.

<XFER>	Transfer raster graphics data
<MOVX>	Set relative horizontal position
<MOVY>	Set relative vertical position
<COLR>	Select printing color
<CR>	Carriage return to left-most print position
<EXIT>	Exit TIFF compressed mode
<MOVXBYTE>	Set <MOVX> unit to 8 dots (one byte)
<MOVXDOT>	Set <MOVX> unit to 1 dot

The command descriptions for the binary mode commands follow.

**Format**

Class	3				
ASCII	<XFER>	n	d <sub>1</sub>	...	d <sub>n</sub>
Binary	001F xxxxB	n	d <sub>1</sub>	...	d <sub>n</sub>

**Parameter range**

#BC = Low nibble value

F = 0 then #BC = number of raster image data, where 0 ≤ #BC ≤ 15

F = 1 then #BC = number of raster image data counter, where #BC = 1, 2

number of raster data = n<sub>1</sub> or n<sub>1</sub> + n<sub>2</sub> × 256

**Function**

Horizontal print position is moved to the next dot after this command is received

(TIFF format)

- Moves raster data to the band buffer of the selected color.
- Current data does not affect next raster data.

**Notes**

- This command is available when the ESC . 2 TIFF compressed graphics mode is selected.
- The compressed data format is the same as that for current ESC/P raster compression (ESC . 1).
- This command does not affect the vertical print position.
- Current data does not affect subsequent raster data.
- Do not change the image density in raster graphics mode.
- Do not specify the vertical movement in increments smaller than the current print density.
- Print data that exceeds the right margin is ignored.

**Printers featuring this command**

Stylus COLOR

**Model-dependent variations**

None

**Related topics**

ESC . 2, ESC ( i, ESC ( G

**Format**

Class 2  
 ASCII <MOVX> n<sub>L</sub> n<sub>H</sub>  
 Binary 010F xxxxB n<sub>L</sub> n<sub>H</sub>

**Parameter range**

#BC = Low nibble value

F = 0, 1

0 ≤ n<sub>L</sub> ≤ 255

0 ≤ n<sub>H</sub> ≤ 127

F	#BC value	Positioning parameter (k)	Command
F = 0	#BC = k	#BC (-8 ~ 7)	<MOVX>
F = 1	#BC = 1	n <sub>L</sub> (-128 ~ 127)	<MOVX> n <sub>L</sub>
	#BC = 2	n <sub>L</sub> + n <sub>H</sub> × 256 n <sub>H</sub> (-32768 ~ 32767)	<MOVX> n <sub>H</sub>

F = 0 then #BC = parameter where  $-8 \leq \#BC \leq 7$

F = 1 then #BC = number of parameter counter where #BC = 1, 2

Increment unit is 8 or 1 and is selected by the <MOVXDOT> or <MOVXBYTE> command

**Function**

- This command is available when the ESC . 2 TIFF compressed graphics mode is selected.
- Sets relative horizontal position. The new horizontal position = current position + (parameter) × <MOVX> unit.
- <MOVX> unit is set by the <MOVXDOT> or <MOVXBYTE> command.
- If #BC has a negative value, it is described with two's complement.

**Notes**

- The unit for this command is determined by the ESC ( U set unit command.
- The parameter of the new horizontal position should be a multiple of eight when the dot unit horizontal move is used.
- Settings that exceed the right or left margin will be ignored.

**Printers featuring this command**

Stylus COLOR

**Model-dependent variations**

None

**Related topics**

ESC . 2, ESC ( U, <MOVXDOT>, <MOVXBYTE>

**Format**

Class	2		
ASCII	<MOVY>	n <sub>L</sub>	n <sub>H</sub>
Binary	011F xxxxB	n <sub>L</sub>	n <sub>H</sub>

**Parameter range**

#BC = Low nibble value

0 ≤ n<sub>L</sub> ≤ 2550 ≤ n<sub>H</sub> ≤ 127

F	#BC value	Positioning parameter (k)	Command
F = 0	#BC = k	#BC (0 ~ 15)	<MOVX>
F = 1	#BC = 1	n <sub>L</sub> (16 ~ 255)	<MOVX> n <sub>L</sub>
	#BC = 2	n <sub>L</sub> + n <sub>H</sub> × 256 n <sub>H</sub> (0 ~ 32767)	<MOVX> n <sub>H</sub>

F = 0 then #BC = parameter where 0 ≤ #BC ≤ 15

F = 1 then #BC = number of parameter counter where #BC = 1, 2

**Function**

- Moves relative vertical position by dot. The new vertical position = current position + (parameter).
- Moves the horizontal print position to 0 (left-most print position).
- Positive value only is allowed. The print position cannot be moved in a negative direction (up).

**Notes**

- This command is available when the ESC . 2 TIFF compressed graphics mode is selected.
- The unit for this command is determined by the ESC ( U set unit command .
- After the vertical print position is moved, all seed row(s) are copied to the band buffer.
- Settings beyond 22 inches are ignored.

**Printers featuring this command**

Stylus COLOR

**Model-dependent variations**

None

**Related topics**

ESC . 2, ESC ( i, ESC ( U, ESC ( G

**Format**

Class 2  
ASCII <COLR>  
Binary 1000 xxxxB

**Parameter range**

1000 0000B	Black
1000 0001B	Magenta
1000 0010B	Cyan
1000 0100B	Yellow

**Function**

Moves the horizontal print position to 0 (left-most print position).

*(TIFF format)*

Selects the band buffer color.

**Notes**

- This command is available when the ESC . 2 TIFF compressed graphics mode is selected.
- Parameters other than those listed above are ignored.
- Combinations of colors are not available and will be ignored.

**Printers featuring this command**

Stylus COLOR

**Model-dependent variations**

None

**Related topics**

ESC . 2, ESC r, ESC ( G

**Format**

Class        1  
ASCII      <CR>  
Binary 1110 0010B

**Function**

Moves the horizontal print position to 0 (left-most print position).

**Printers featuring this command**

Stylus COLOR

**Model-dependent variations**

None

**Related topics**

ESC . 2, ESC ( G

***Format***

Class        1  
ASCII    <EXIT>  
Binary 1110 0011B

***Function***

- Exits TIFF compressed raster graphics mode.
- Starts printing of stored data.
- Moves the horizontal print position to 0 (left-most print position).

***Notes***

This command is available when the ESC . 2 TIFF compressed mode is selected.

***Printers featuring this command***

Stylus COLOR

***Model-dependent variations***

None

***Related topics***

ESC . 2, ESC ( i, ESC ( G

*Format*

Class       1  
ASCII <MOVXBYTE>  
Binary 0010 0100B

*Function*

- Sets the increment of <MOVX> unit to 8.
- Starts printing of stored data.
- Moves the horizontal print position to 0 (left-most print position).
- Does not move the vertical print position.

*Notes*

- The unit for this command is determined by the ESC ( U set unit command.
- This command is available when ESC . 2 TIFF compressed mode is selected.
- Execute command ESC ( G before sending this command.
- Execute this command immediately after entering raster graphics mode by sending the ESC . 2 command.

*Printers featuring this command*

Stylus COLOR

*Model-dependent variations*

None

*Related topics*

ESC . 2, ESC ( i, ESC ( G

*Format*

Class       1  
ASCII <MOVXDOT>  
Binary 0010 0101B

*Function*

- Sets the increment of <MOVX> unit to 1.
- Starts printing of stored data.
- Moves the horizontal print position to 0 (left-most print position).
- Does not move the vertical print position.

*Notes*

- The unit for this command is determined by the ESC ( U set unit command.
- This command is available when ESC . 2 TIFF compressed mode is selected.
- Execute command ESC ( G before sending this command.
- Execute this command immediately after entering raster graphics mode by sending the ESC . 2 command.

*Printers featuring this command*

Stylus COLOR

*Model-dependent variations*

None

*Related topics*

ESC . 2, ESC ( i, ESC ( G