

LA210 Letterprinter

Emulation Modes Reference Guide

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This guide summarizes the information on printer emulation modes found in your *LA210 Letterprinter Programmer Reference Manual*. For information on general operating and programming features, see your *LA210 Letterprinter Operator and Programmer Reference Guide*.

EMULATION MODE 1

IBM/EPSON MX80

This mode uses the LA10X-LB mosaic cartridge (font ID 137). Install it in either slot 2 or 4. The other slot can hold any other font cartridge.

SWITCH-SELECTABLE FEATURES

Switch A

Switch	Setting	Function
A1, A2	Up or down	Not used.
A3	Up	When line buffer is full, printer prints line and advances to next line.
	Down	When line buffer is full, printer drops characters.
A4	Up	Cancel (CAN) character clears line buffer.
	Down	CAN character is ignored.
A5	Up	Delete (DEL) character clears line buffer.
	Down	DEL character is ignored.
A6	Up	Printer performs an automatic line feed when it receives a carriage return (CR) character.
	Down	The printer only performs a carriage return.
A7	Up	When printer receives BELL character, error bell sounds.
	Down	BELL character is ignored.
A8	Up	Selects standard 8-inch paper width at power-up.
	Down	Selects 13-inch paper width.

Switch B

Switch	Setting	Function
B1 to B4	All up	Enables emulation mode.
B5	Up	Selects emulation mode 1.
B6	Down	Selects emulation mode 1.
B7	Up or down	Not used.
B8	Up	Enables 2K buffer.
	Down	Enables 0.13K buffer.

MODE 1 CHARACTER SET

BITS				0 0 0		0 0 1		0 1 0		0 1 1		1 0 0		1 0 1		1 1 0		1 1 1			
B4	B3	B2	B1	COLUMN		0		1		2		3		4		5		6		7	
ROW				0		1		2		3		4		5		6		7			
0 0 0 0	0	NUL			0	0	20	16	SP	40	0	60	@	100	P	120	+	140	p	160	
0 0 0 1	1				1	1	21	17	!	41	1	61	A	101	Q	121	a	141	q	161	
0 0 1 0	2				2	2	22	18	"	42	2	62	B	102	R	122	b	142	r	162	
0 0 1 1	3				3	3	23	19	#	43	3	63	C	103	S	123	c	143	s	163	
0 1 0 0	4				4	4	24	20	\$	44	4	64	D	104	T	124	d	144	t	164	
0 1 0 1	5				5	5	25	21	%	45	5	65	E	105	U	125	e	145	u	165	
0 1 1 0	6				6	6	26	22	&	46	6	66	F	106	V	126	f	146	v	166	
0 1 1 1	7	BEL			7	7	27	23	'	47	7	67	G	107	W	127	g	147	w	167	
1 0 0 0	8				8	8	28	24	(	48	8	68	H	110	X	130	h	150	x	170
1 0 0 1	9	HT			9	9	29	25	)	49	9	69	I	111	Y	131	i	151	y	171
1 0 1 0	10	LF			10	10	30	26	*	50	:	70	J	112	Z	132	j	152	z	172	
1 0 1 1	11	VT			11	11	31	27	+	51	;	71	K	113	[	133	k	153	{	173
1 1 0 0	12	FF			12	12	32	28	,	52	<	72	L	114	\	134	l	154	|	174	
1 1 0 1	13	CR			13	13	33	29	-	53	=	73	M	115	]	135	m	155	}	175
1 1 1 0	14	SO			14	14	34	30	.	54	>	74	N	116	^	136	n	156	~	176	
1 1 1 1	15	SI			15	15	35	31	/	55	?	75	O	117	_	137	o	157	DEL	177	

ASCII CONTROL SET										ASCII GRAPHIC CHARACTER SET									
-------------------	--	--	--	--	--	--	--	--	--	-----------------------------	--	--	--	--	--	--	--	--	--

ASCII CONTROL SET

ASCII GRAPHIC CHARACTER SET

KEY

ASCII CHARACTER

ESC

33

27

18

OCTAL

DECIMAL

HEX

	1	0	0	0		1	0	0	1		1	0	1	0		1	0	1	1		1	0	0		1	1	0		1	1	1	1	
	8		9		10		11		12		13		14		15																		
NUL	200		220		240		260		300		320																						
	128		144		160		176		192		208																						
	80		90		A0		80		C0		D0																						
	201	DC1	221		241		261		301		321																						
	129		145		161		177		193		209																						
	81		91		A1		B1		C1		D1																						
	202	DC2	222		242		262		302		322																						
	130		146		162		178		194		210																						
	82		92		A2		B2		C2		D2																						
	203	DC3	223		243		263		303		323																						
	131		147		163		179		195		211																						
	83		93		A3		B3		C3		D3																						
	204	DC4	224		244		264		304		324																						
	132		148		164		180		196		212																						
	84		94		A4		B4		C4		D4																						
	205		225		245		265		305		325																						
	133		149		165		181		197		213																						
	85		95		A5		B5		C5		D5																						
	206		226		246		266		306		326																						
	134		150		166		182		198		214																						
	86		96		A6		B6		C6		D6																						
BEL	207		227		247		267		307		327																						
	135		151		167		183		199		215																						
	87		97		A7		B7		C7		D7																						
	210	CAN	230		250		270		310		330																						
	136		152		168		184		200		216																						
	88		98		A8		B8		C8		D8																						
HT	211		231		251		271		311		331																						
	137		153		169		185		201		217																						
	89		99		A9		B9		C9		D9																						
LF	212		232		252		272		312		332																						
	138		154		170		186		202		218																						
	8A		9A		AA		BA		CA		DA																						
VT	213	ESC	233		253		273		313		333																						
	139		155		171		187		203		219																						
	8B		9B		AB		B8		C8		D8																						
FF	214		234		254		274		314		334																						
	140		156		172		188		204		220																						
	8C		9C		AC		BC		CC		DC																						
CR	215		235		255		275		315		335																						
	141		157		173		189		205		221																						
	8D		9D		AD		BD		CD		DD																						
SO	216		236		256		276		316		336																						
	142		158		174		190		206		222																						
	8E		9E		AE		BE		CE		DE																						
SI	217		237		257		277		317		337																						
	143		159		175		191		207		223																						
	8F		9F		AF		BF		CF		DF																						
ADDITIONAL CONTROL SET				MODE 1 SUPPLEMENTAL CHARACTER SET																													

CONTROL CHARACTERS

C0 and C1 Control Characters

Name	Mnemonic	Octal Code		Function
		C0	C1	
Null	NUL	00	200	Used in escape sequences.
Bell	BEL	07	207	Sounds bell if enabled by switch A7 .
Horizontal tab	HT	11	211	Advances to next horizontal tab, if any. Otherwise, takes no action.
Line feed	LF	12	212	Prints buffer's contents, then advances paper by current line spacing.
Vertical tab	VT	13	213	Prints buffer's contents, then moves to next vertical tab, if any. Otherwise, performs line feed.
Form feed	FF	14	214	Advances to next top of form.
Carriage return	CR	15	215	Prints buffer's contents, then performs a carriage return. Also performs a line feed if line feed/new line is enabled by switch A6 .
Shift out	SO	16	216	Sets doublewidth for all following characters, until the next line terminator or DC4 is received.
Shift in	SI	17	217	Sets compressed pitch for current line and following lines, until DC2 is received.

C0 and C1 Control Characters (Cont)

Name	Mnemonic	Octal Code		Function
		C0	C1	
Device control 1	DC1	21	221	Enables the printer and clears print buffer.
Device control 2	DC2	22	222	Sets standard pitch for current line and following lines, until SI is received.
Device control 3	DC3	23	223	Disables the printer until DC1 is received.
Device control 4	DC4	24	224	Sets single width for all following characters, until SO is received
Cancel	CAN	30	230	Clears the print buffer if enabled by switch A4 .
Escape	ESC	33	233	Starts escape sequences.

ESCAPE SEQUENCES

Vertical Form Handling

Name (Mnemonic)	Sequence	Function
Set vertical pitch (ER8LI)	ESC 0 033 060	Sets vertical pitch to 8 lines per inch.
(ER10LI)	ESC 1 033 061	Sets vertical pitch to 10.3 lines per inch (72/7).
(ERNLI2)	ESC 2 033 062	Sets vertical pitch to the setting specified in a previous ESC A sequence.
(ERNLI1)	ESC A Pn 033 101 ***	Sets vertical pitch to 72/Pn lines per inch. Does not take effect until ESC 2 is sent.
Set form length (ERSFL)	ESC C Pn 033 103 ***	Sets the form length to the number of inches that equal Pn X current pitch.

Vertical Tabs

Name (Mnemonic)	Sequence	Function
Set vertical tabs (ERSVT)	ESC B Pn1 Pn2 Pn NUL 033 102 *** *** *** 000	Clears vertical tabs, then sets tabs at Pn1, Pn2, and other designated stops. Pn is a character representing the line numbers in ascending order. For example, the character DC2 sets a tab at line 18. You can specify up to 16 tabs in one sequence.

Horizontal Tabs

Name (Mnemonic)	Sequence						Function
Set horizontal tabs (ERSHT)	ESC	D	Pn1	Pn2	Pn	NUL 000	Clears horizontal tabs, then tabs at Pn1, Pn2, and other designated stops. Pn is a character representing the column number of the desired tab. For example, the character DC2 sets a tab at column 18. You can specify up to 16 tabs.
	033	104	***	***	***		

Paper Fault Handling

Name (Mnemonic)	Sequence		Function
Disable paper out (ERDPO)	ESC	8 033 056	Disables paper-out handling.
Enable paper out (EREPO)	ESC	9 033 057	Enables paper-out handling.

Printing Modes

Name (Mnemonic)	Sequence		Function
Enable bold (EREBD)	ESC	E 033 105	Sets bold printing for all following characters.
Disable bold (ERDBD)	ESC	F 033 106	Turns off bold printing for all following characters.
Set high resolution (EREHR)	ESC	G 033 107	Enters high resolution mode.
Set low resolution (ERDHR)	ESC	H 033 108	Enters low resolution mode.

EMULATION MODE 2

IBM/EPSON MX80 PLUS GRAFTRAX

This mode uses two cartridges, the LA10X-AP italic 10 (primary font, ID 011) and LA10X-LC Grafrax (font ID 143). Install the italic cartridge in slot 2 and Grafrax cartridge in slot 4. If another style is desired, install the alternate primary font cartridge in slot 2.

SWITCH-SELECTABLE FEATURES

Switch A

Switch	Setting	Function
A1	Down	Printer is set to standard horizontal pitch at power-up.
	Up	Printer operates at compressed horizontal pitch.
A2	Up	Sets bottom margin to 1 inch at power-up.
A3	Up	Enables bold printing at power-up.
A4	Up	Enables italic printing at power-up.
A5	Up	Enables slashed zero (Ø) printing at power-up.
A6	Up	Printer performs an automatic line feed when it receives a carriage return (CR) character.
	Down	Printer only performs a carriage return.
A7	Up	When printer receives BELL character, error bell sounds.
	Down	BELL character is ignored.
A8	Up	Selects standard 8-inch paper width at power-up.
	Down	Selects 13-inch paper width.

Switch B

Switch	Setting	Function
B1 to B4	All up	Enables emulation mode.
B5	Down	Selects emulation mode 2.
B6	Up	Selects emulation mode 2.
B7	Up or down	Not used.
B8	Up	Enables 2K buffer.
	Down	Enables 0.13K buffer.

MODE 2 CHARACTER SET

BITS				0 0 0 0		0 0 0 1		0 0 1 0		0 0 1 1		0 1 0 0		0 1 0 1		0 1 1 0		0 1 1 1	
B4 B3 B2 B1				COLUMNS		1		2		3		4		5		6		7	
ROW				0		1		2		3		4		5		6		7	
0	0	0	0	0	NUL	20	16	SP	40	0	60	@	100	P	120	4	140	p	160
0	0	0	1	1		21	17	!	41	1	61	A	101	Q	121	a	141	q	161
0	0	1	0	2		22	18	"	42	2	62	B	102	R	122	b	142	r	162
0	0	1	1	3		23	19	#	43	3	63	C	103	S	123	c	143	s	163
0	1	0	0	4		24	20	\$	44	4	64	D	104	T	124	d	144	t	164
0	1	0	1	5		25	21	%	45	5	65	E	105	U	125	e	145	u	165
0	1	1	0	6		26	22	&	46	6	66	F	106	V	126	f	146	v	166
0	1	1	1	7	BEL	27	23	'	47	7	67	G	107	W	127	g	147	w	167
1	0	0	0	8	BS	28	24	(	48	8	68	H	110	X	130	h	150	x	170
1	0	0	1	9	HT	29	25	)	49	9	69	I	111	Y	131	i	151	y	171
1	0	1	0	10	LF	30	26	*	50	:	70	J	112	Z	132	j	152	z	172
1	0	1	1	11	VT	31	27	+	51	;	71	K	113	[	133	k	153	{	173
1	1	0	0	12	FF	32	28	,	52	<	72	L	114	\	134	l	154	:	174
1	1	0	1	13	CR	33	29	-	53	=	73	M	115	]	135	m	155	}	175
1	1	1	0	14	SO	34	30	.	54	>	74	N	116	^	136	n	156	~	176
1	1	1	1	15	SI	35	31	/	55	?	75	O	117	_	137	o	157	DEL	177

ASCII CONTROL SET

ASCII GRAPHIC CHARACTER SET

KEY

ASCII CHARACTER

ESC	33	OCTAL
	27	DECIMAL
	1B	HEX

MR. 12449
MA. 0603-84

1 0 0	1 0 0 1	1 0 1 0	1 0 1 1	1 1 0 0	1 1 0 1	1 1 1 0	1 1 1 1	
8	9	10	11	12	13	14	15	
NUL 200 128 80		220 144 90	SP 240 160 AD	0 260 176 80	@ 300 192 CD	P 320 208 00	T 340 224 E0	p 360 240 F0
£ 201 129 81		221 145 91	! 241 161 A1	1 261 177 81	A 301 193 C1	Q 321 209 D1	a 341 225 E1	q 361 241 F1
** 202 130 82	DC2	222 146 92	" 242 162 A2	2 262 178 82	B 302 194 C2	R 322 210 D2	b 342 226 E2	r 362 242 F2
' 203 131 83		223 147 93	# 243 163 A3	3 263 179 83	C 303 195 C3	S 323 211 D3	c 343 227 E3	s 363 243 F3
' 204 132 84	DC4	224 148 94	\$ 244 164 A4	4 264 180 84	D 304 196 C4	T 324 212 D4	d 344 228 E4	t 364 244 F4
§ 205 133 85	7	225 149 95	% 245 165 A5	5 265 181 85	E 305 197 C5	U 325 213 D5	e 345 229 E5	u 365 245 F5
r 206 134 86	┐	226 150 96	& 246 166 A6	6 266 182 86	F 306 198 C6	V 326 214 D6	f 346 230 E6	v 366 246 F6
BEL 207 135 87	┘	227 151 97	' 247 167 A7	7 267 183 87	G 307 199 C7	W 327 215 D7	g 347 231 E7	w 367 247 F7
BS 210 136 88	T	230 152 98	(250 168 A8	8 270 184 88	H 300 200 C8	X 310 216 D8	h 350 232 E8	x 370 248 F8
HT 211 137 89	L	231 153 99	) 251 169 A9	9 271 185 89	I 311 201 C9	Y 331 217 D9	i 351 233 E9	y 371 249 F9
LF 212 138 8A	J	232 154 9A	* 252 170 AA	: 272 186 8A	J 312 202 CA	Z 332 218 DA	j 352 234 EA	z 372 250 FA
VT 213 139 8B	ESC	233 155 9B	+ 253 171 AB	; 273 187 8B	K 313 203 CB	[333 219 DB	k 353 235 EB	{ 373 251 FB
FF 214 140 8C	I	234 156 9C	, 254 172 AC	< 274 188 8C	L 314 204 CC	\ 334 220 DC	l 354 236 EC	/ 374 252 FC
CR 215 141 8D	-	235 157 9D	- 255 173 AD	= 275 189 8D	M 315 205 CD	] 335 221 DD	m 355 237 ED	} 375 253 FD
SO 216 142 8E	└	236 158 9E	, 256 174 AE	> 276 190 8E	N 316 206 CE	^ 336 222 DE	n 356 238 EE	~ 376 254 FE
SI 217 143 8F	+	237 159 9F	/ 257 175 AF	? 277 191 8F	O 317 207 CF	- 337 223 DF	o 357 239 EF	DEL 377 255 FF
ADDITIONAL CONTROL SET		MODE 2 SUPPLEMENTAL CHARACTER SET						

CONTROL CHARACTERS

CO Control Characters

Name	Mnemonic	Octal Code	Function
Null	NUL	00	Used in escape sequences.
Bell	BEL	07	Sounds bell if enabled by switch A7 .
Backspace	BS	10	Prints buffer's contents, then moves back one character cell. (Moves back two cells if this is first time in double width.)
Horizontal tab	HT	11	Moves to next horizontal tab, if any. Otherwise, takes no action.
Line feed	LF	12	Prints buffer's contents, then advances paper by current line spacing.
Vertical tab	VT	13	Prints buffer's contents, then performs a line feed.
Form feed	FF	14	Advance to next top of form.
Carriage return	CR	15	Prints buffer's contents, then returns to left margin. Performs line feed if enabled by switch A6 .

C0 Control Characters (Cont)

Name	Mnemonic	Octal Code	Function
Shift out	SO	16	Sets double width for all following characters, until the next line terminator or DC4 is received.
Shift in	SI	17	Sets compressed pitch for current line and following lines, until DC2 is received.
Device control 2	DC2	22	Sets standard horizontal pitch for current line and following lines, until SI is received.
Device control 4	DC4	24	Sets single width for all following characters, until SO is received.
Escape	ESC	33	Starts escape sequences.

C1 Control Characters

Name	Mnemonic	Octal Code	Function
Null	NUL	200	Used in escape sequences.
Pound sign	—	201	*
Umlaut	—	202	*
Opening single quote	—	203	*
Closing single quote	—	204	*
Paragraph	—	205	*
Top level corner	—	206	*
Bell	BEL	207	Sounds bell tone if enabled by switch A7 .
Backspace	BS	210	Prints buffer's contents, then moves back one character cell.
Horizontal tab	HT	211	Advances to next horizontal tab stop, if any. Otherwise, takes no action.
Line feed	LF	212	Prints buffer's contents, then advances paper by current line spacing.
Vertical tab	VT	213	Prints buffer's contents, then performs a line feed.
Form feed	FF	214	Advances to next top of form.
Carriage return	CR	215	Prints buffer's contents, then returns to left margin. Performs line feed if enabled by switch A6 .

C1 Control Characters (Cont)

Name	Mnemonic	Octal Code	Function
Shift out	SO	216	Sets double width for all following characters, until next line terminator or DC4 is received.
Shift in	SI	217	Sets compressed horizontal pitch for current line and following lines, until DC2 is received.
Device control 2	DC2	222	Sets standard horizontal pitch for current line and following lines, until SI is received.
Device control 4	DC4	224	Sets single width for all following characters, until SO is received.
Top right corner		225	*
Right T		226	*
Left T		227	*
Top T		230	*
Bottom left corner		231	*
Bottom right corner		232	*
Escape	ESC	233	Starts escape sequences.
Vertical line		234	*
Horizontal line		235	*
Bottom T		236	*
Center cross		237	*

* Indicates a printable character. See the Mode 2 Character Set for examples of these characters.

ESCAPE SEQUENCES

Vertical Form Handling

Name (Mnemonic)	Sequence	Function
Set vertical pitch (ER8LI)	ESC 0 033 060	Sets vertical pitch to 8 lines per inch.
(ER10LI)	ESC 1 033 061	Sets vertical pitch to 10.3 (72/7) lines per inch.
(ER6LI2)	ESC 2 033 062	Sets vertical pitch to 6 lines per inch.
(ERNLI3)	ESC 3 Pn 033 063 ***	Sets vertical pitch to 216/Pn lines per inch.
(ERNLI5)	ESC A Pn 033 101 ***	Sets vertical pitch to 72/Pn lines per inch.
(ERNLI4)	ESC J Pn 033 112 ***	Prints buffer's contents, then sets vertical pitch to 216/Pn lines per inch for next line feed only.
Set form length (ERSFL)	ESC C Pn 033 103 ***	Sets the form length to the number of inches that equal Pn X current pitch.
(ERSFLI)	ESC C NUL Pn 033 103 000 ***	Sets the form length to Pn inches.
Set bottom margin (ERSBM)	ESC N Pn 033 116 ***	Sets the bottom margin to Pn lines from the bottom of the page.
Clear bottom margin (ERCBM)	ESC O 033 117	Clears the bottom margin. Overrides any margin set by switch A2 .

Horizontal Form Handling

Name (Mnemonic)	Sequence	Function
Set right margin (ERSRM)	ESC Q Pn 033 121 ***	Sets right margin to Pn (column number in octal).
Set double-width characters (EREDW)	ESC W >0 033 127 ***	Sets double-width characters for current line and following lines. Any non-zero character as the third character completes this sequence.
Set single-width characters (ERDDW)	ESC W NUL 033 127 000	Sets single-width characters for current line and following lines.

Horizontal Tabs

Name (Mnemonic)	Sequence	Function
Set horizontal tabs (ERSHT)	ESC D Pn1 Pn2 Pn NUL 033 104 *** *** *** 000 or ESC D Pn1 Pn2 Pn 80H 033 104 *** *** *** 200	Sets horizontal tab stops at Pn1, Pn2, and other designated stops. Pn is a character representing the column number of the desired stop. For example, the character DC2 sets a tab at column 18. You can specify up to 16 tabs.

Paper Fault Handling

Name (Mnemonic)	Sequence	Function
Disable paper out (ERDPO)	ESC 8 033 056	Disables paper- out handling.
Enable paper out (EREPO)	ESC 9 033 057	Enables paper- out handling.

Unidirectional/Bidirectional Control

Name (Mnemonic)	Sequence	Function
Set one-line unidirectional printing (EREUDI)	ESC < 033 074	Prints current line from left to right.
Set bidirectional printing (ERDUD)	ESC U NUL 033 074 000	Prints lines in bidirectional mode.
Set unidirectional printing (EREUD)	ESC U >0 033 074 ***	Prints lines from left to right only. Any nonzero character as the third character completes this sequence.

Character Set Mapping

When you install a primary cartridge other than the italic cartridge in slot 2, all references to the italic set in the following table apply to the character set of the installed primary cartridge.

Switch A4 Setting	Escape Sequence	C0	GL	C1	GR
Down (normal)	None	C0	ASCII	C1	Italic ASCII
Up (italic)	None	C0	Italic ASCII	C1	Italic ASCII
Down (normal)	ER8BS	C1	Italic ASCII	C1	Italic ASCII
Down (normal)	ER8BC	C0	ASCII	C0	ASCII
Up (italic)	ER8BS	C1	Italic ASCII	C1	Italic ASCII
Up (italic)	ER8BC	C0	Italic ASCII	C0	Italic ASCII

Name (Mnemonic)	Sequence	Function
Retain eighth bit (ER8BU)	ESC # 033 043	Keeps 8th bit unchanged. Use current character set.
Clear eighth bit (ER8BC)	ESC = 033 075	Clears 8th bit (sets to 0). Maps the default GL and C0 character set to the C1 and GR range.
Set eighth bit (ER8BS)	ESC > 033 076	Sets 8th bit. Maps the default C1 and GR character set to the C0 and GL range.

Printing Modes

Name (Mnemonic)	Sequence	Function
Enable bold (EREBD)	ESC E 033 105	Sets bold printing for all following characters.
Disable bold (ERDBD)	ESC F 033 106	Turns off bold printing for all following characters.

Printing Modes (Cont)

Name (Mnemonic)	Sequence	Function
Set high resolution (EREHR)	ESC G 033 107	Enters high resolution mode.
Set low resolution (ERDHR)	ESC H 033 108	Enters low resolution mode. and resets the script setting.
Set underline (EREUL)	ESC - >0 033 045 ***	Underlines all following characters. Any nonzero character as the third character completes this sequence.
Reset underline (ERDUL)	ESC - NUL 033 045 000	Turns off underlining for all following characters.
Select italic (EREIL)	ESC 4 033 064	Selects italic ASCII set as GL.
Select nonitalic (ERDIL)	ESC 5 033 065	Selects nonitalic ASCII set as GL.
Enable superscript (ERESCR)	ESC S NUL 033 123 000	Prints all following characters in superscript mode.
Enable subscript (ERESCR)	ESC S >0 033 123 ***	Prints all following characters in subscript mode. Any non-zero character as the third character completes this sequence.
Reset script and directional printing (ERDSCR)	ESC T 033 124	Resets script setting to no script and resets printing mode to bidirectional.

Graphics Mode

Name (Mnemonic)	Sequence				Function
60 DPI graphics (ERGR6)	ESC 033	K 113	Pn1 ***	Pn2 ***	<p>Enter 60 dots per inch for the next n bytes. Pn1 and Pn2 together specify the number of bytes according to the formula</p> $n = (256 \times Pn2) + Pn1$ <p>The total must be less than the remainder of bytes in the line buffer. If the buffer is empty, the total must be less than 480 (8-inch paper selected) or less than 780 (13-inch paper selected).</p>
132 DPI graphics (ERGR12)	ESC 033	L 114	Pn1 ***	Pn2 ***	<p>Enter 132 dots per inch for the next n bytes. Pn1 and Pn2 together specify the number of bytes according to the formula</p> $n = (256 \times Pn2) + Pn1$ <p>The total must be less than the remainder of bytes in the line buffer. If the buffer is empty, the total must be less than 960 (8-inch paper selected) or less than 1740 (13-inch paper selected).</p>

Reset

Name (Mnemonic)	Sequence	Function
Reset (ERRIS)	ESC @ 033 100	Resets all features (previously set by escape sequences) to their initial default settings.

Mode 2 Default Settings (Restored by Reset)

Feature	Setting
GL character set	Set to current setting of switch A4 . (GL is not italic if A4 is set to down position.)
8-bit operations	Leave 8th bit unchanged.
Print direction	Set to bidirectional.
Script	Set to no superscript or subscript.
Character width	Set to single width.
Underline	Set to no underlining.
Paper fault	Enabled.
Vertical tab	Set to every line.
Horizontal tab	Set every eight columns (1, 9, 17, ...).
Form length	Set to 11 inches.
Bottom margin	Set to current setting of switch A2 (either no bottom margin or 1-inch margin).
Vertical pitch	Set to 6 lines per inch.
Paper width	Set to current setting of switch A8 (either 8 inches or 13 inches).
Right margin	Set to the current paper width selected by switch A8 .
Resolution	Set to low resolution.
Bold	Set to current setting of switch A3 .
Horizontal pitch	Set to current setting of switch A1 (either standard or compressed).

EMULATION MODE 3 IBM GRAPHICS PRINTER

This mode uses two cartridges, the LA10X-LA line drawing (font ID 139) and LA10X-LD foreign style (font ID 141). You can install these cartridges in slot 2 or 4.

SWITCH-SELECTABLE FEATURES

Switch A

Switch	Setting	Function
A1, A2	Up or down	Not used.
A3	Up	When line buffer is full, printer prints line and advances to next line.
	Down	When line buffer is full, printer drops characters.
A4	Up	Cancel (CAN) character clears line buffer.
	Down	CAN character is ignored.
A5	Up	Delete (DEL) character clears line buffer.
	Down	DEL character is ignored.
A6	Up	Printer performs an automatic line feed when it receives a carriage return (CR) character.
	Down	Printer only performs a carriage return.
A7	Up	When printer receives BELL character, error bell sounds.
	Down	BELL character is ignored.
A8	Up	Selects standard 8-inch paper width at power-up.
	Down	Selects 13-inch paper width.

Switch B

Switch	Setting	Function
B1 to B4	All up	Enables emulation mode.
B5, B6	Up	Selects emulation mode 3.
B7	Up or down	Not used.
B8	Up	Enables 2K buffer.
	Down	Enables 0.13K buffer.

MODE 3 CHARACTER SET 1





































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

ASCII CONTROL SET

ASCII GRAPHIC CHARACTER SET

KEY

ASCII CHARACTER	ESC	33 27 18	OCTAL DECIMAL HEX
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1 0 0 0		1 0 0 1		1 0 1 0		1 0 1 1		1 1 0 0		1 1 0 1		1 1 1 0		1 1 1 1	
8		9		10		11		12		13		14		15	
NUL	200	220	ā	240		260		300		320	α	340	≡	360	
	128	144	160	176	192	208	224	240	256	272	288	304	320	336	
	80	90	A0	B0	C0	D0	E0	F0							
	201	221	ī	241		261		301		321	β	341	±	361	
	129	145	161	177	193	209	225	241	257	273	289	305	321	337	
	81	91	A1	B1	C1	D1	E1	F1							
	202	222	ō	242		262		302		322	Γ	342	≥	362	
	130	146	162	178	194	210	226	242	258	274	290	306	322	338	
	82	92	A2	B2	C2	D2	E2	F2							
	203	223	ú	243	263		303		323	Π	343	≤	363		
131	147	163	179	195	211	227	243	259	275	291	307	323	339		
83	93	A3	B3	C3	D3	E3	F3								
DC4	204	224	ñ	244	264	304		304		324	Σ	344	ƒ	364	
	132	148	164	180	196	212	228	244	260	276	292	308	324	340	
	84	94	A4	B4	C4	D4	E4	F4							
	205	225	Ñ	245	265	305		305		325	σ	345	♪	365	
	133	149	165	181	197	213	229	245	261	277	293	309	325	341	
	85	95	A5	B5	C5	D5	E5	F5							
	206	226	ā	246	266	306		306		326	μ	346	÷	366	
	134	150	166	182	198	214	230	246	262	278	294	310	326	342	
	86	96	A6	B6	C6	D6	E6	F6							
	BEL	207	227	o	247	267	307		307		327	τ	347	≈	367
135		151	167	183	199	215	231	247	263	279	295	311	327	343	
87		97	A7	B7	C7	D7	E7	F7							
210		230	z	270	310		310		330	ϕ	350	o	370	390	
136		152	168	184	200	216	232	248	264	280	296	312	328	344	
88		98	A8	B8	C8	D8	E8	F8							
211		231	251	271	311		311		331	351	371	391	411	431	
137		153	169	185	201	217	233	249	265	281	297	313	329	345	
89		99	A9	B9	C9	D9	E9	F9							
LF		212	232	—	272	312		312		332	Ω	352	—	372	392
	138	154	170	186	202	218	234	250	266	282	298	314	330	346	
	8A	9A	AA	BA	CA	DA	EA	FA							
	213	233	½	273	313		313		333	δ	353	√	373	393	
	139	155	171	187	203	219	235	251	267	283	299	315	331	347	
	8B	9B	AB	BB	CB	DB	EB	FB							
	214	234	¼	274	314		314		334	∞	354	n	374	394	
	140	156	172	188	204	220	236	252	268	284	299	315	331	347	
	8C	9C	AC	BC	CC	DC	EC	FC							
	CR	215	235	ı	275	315		315		335	∅	355	2	375	395
141		157	173	189	205	221	237	253	269	285	299	315	331	347	
8D		9D	AD	BD	CD	DD	ED	FD							
216		236	«	276	316		316		336	€	356		376	396	
142		158	174	190	206	222	238	254	270	286	299	315	331	347	
8E		9E	AE	BE	CE	DE	EE	FE							
217		237	»	277	317		317		337	∩	357	SP	377	397	
143		159	175	191	207	223	239	255	271	287	299	315	331	347	
8F		9F	AF	BF	CF	DF	EF	FF							
ADDITIONAL CONTROL SET		MODE 3 SUPPLEMENTAL CHARACTER SET 1													

MODE 3 CHARACTER SET 2

BITS				COLUMNS		0		1		2		3		4		5		6		7	
88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67
BITS				COLUMNS		0		1		2		3		4		5		6		7	
84 83 82 81 80				0		1		2		3		4		5		6		7			
0	0	0	0	0	NUL	0	20	SP	40	0	60	@	100	P	120	+	140	p	160		
0	0	0	0	1		1	21	!	41	1	61	A	101	Q	121	a	141	q	161		
0	0	0	1	1		2	17		37		57		77		97		117		137		
0	0	1	0	2		3	18		38	2	62	B	102	R	122	b	142	r	162		
0	0	1	0	2		4	19		39		59		79		99		119		139		
0	0	1	1	3		5	20		40	3	63	C	103	S	123	c	143	s	163		
0	1	0	0	4		6	21		41		64	D	104	T	124	d	144	t	164		
0	1	0	0	4		7	22		42		65		105		125		145		165		
0	1	0	1	5		8	23		43	5	66	E	106	U	126	e	146	u	166		
0	1	0	1	5		9	24		44		67		107		127		147		167		
0	1	1	0	6		10	25		45	6	68	F	108	V	128	f	148	v	168		
0	1	1	0	6		11	26		46		69		109		129		149		169		
0	1	1	1	7		12	27		47	7	70	G	110	W	130	g	150	w	170		
0	1	1	1	7		13	28		48		71		111		131		151		171		
1	0	0	0	8		14	29		49	8	72	H	112	X	132	h	152	x	172		
1	0	0	0	8		15	30		50		73		113		133		153		173		
1	0	0	1	9		16	31		51	9	74	I	114	Y	134	i	154	y	174		
1	0	0	1	9		17	32		52		75		115		135		155		175		
1	0	1	0	10		18	33		53	:	76	J	116	Z	136	j	156	z	176		
1	0	1	0	10		19	34		54		77		117		137		157		177		
1	0	1	1	11		20	35		55	:	78	K	118	[	138	k	158	{	178	
1	0	1	1	11		21	36		56		79		119		139		159		179		
1	1	0	0	12		22	37		57	<	80	L	120	\	140	l	160	}	180		
1	1	0	0	12		23	38		58		81		121		141		161		181		
1	1	0	1	13		24	39		59	=	82	M	122	]	142	m	162	}	182	
1	1	0	1	13		25	40		60		83		123		143		163		183		
1	1	1	0	14		26	41		61	>	84	N	124	^	144	n	164	~	184		
1	1	1	0	14		27	42		62		85		125		145		165		185		
1	1	1	1	15		28	43		63	?	86	O	126	_	146	o	166		186		
1	1	1	1	15		29	44		64		87		127		147		167		187		
1	1	1	1	15		30	45		65		88		128		148		168		188		
1	1	1	1	15		31	46		66		89		129		149		169		189		
1	1	1	1	15		32	47		67		90		130		150		170		190		
1	1	1	1	15		33	48		68		91		131		151		171		191		
1	1	1	1	15		34	49		69		92		132		152		172		192		
1	1	1	1	15		35	50		70		93		133		153		173		193		
1	1	1	1	15		36	51		71		94		134		154		174		194		
1	1	1	1	15		37	52		72		95		135		155		175		195		
1	1	1	1	15		38	53		73		96		136		156		176		196		
1	1	1	1	15		39	54		74		97		137		157		177		197		
1	1	1	1	15		40	55		75		98		138		158		178		198		
1	1	1	1	15		41	56		76		99		139		159		179		199		
1	1	1	1	15		42	57		77		100		140		160		180		200		
1	1	1	1	15		43	58		78		101		141		161		181		201		
1	1	1	1	15		44	59		79		102		142		162		182		202		
1	1	1	1	15		45	60		80		103		143		163		183		203		
1	1	1	1	15		46	61		81		104		144		164		184		204		
1	1	1	1	15		47	62		82		105		145		165		185		205		
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1	1	1	1	15		49	64		84		107		147		167		187		207		
1	1	1	1	15		50	65		85		108		148		168		188		208		
1	1	1	1	15		51	66		86		109		149		169		189		209		
1	1	1	1	15		52	67		87		110		150		170		190		210		
1	1	1	1	15		53	68		88		111		151		171		191		211		
1	1	1	1	15		54	69		89		112		152		172		192		212		
1	1	1	1	15		55	70		90		113		153		173		193		213		
1	1	1	1	15		56	71		91		114		154		174		194		214		
1	1	1	1	15		57	72		92		115		155		175		195		215		
1	1	1	1	15		58	73		93		116		156		176		196		216		
1	1	1	1	15		59	74		94		117		157		177		197		217		
1	1	1	1	15		60	75		95		118		158		178		198		218		
1	1	1	1	15		61	76		96		119		159		179		199		219		
1	1	1	1	15		62	77		97		120		160		180		200		220		
1	1	1	1	15		63	78		98		121		161		181		201		221		
1	1	1	1	15		64	79		99		122		162		182		202		222		
1	1	1	1	15		65	80		100		123		163		183		203		223		
1	1	1	1	15		66	81		101		124		164		184		204		224		
1	1	1	1	15		67	82		102		125		165		185		205		225		
1	1	1	1	15		68	83		103		126		166		186		206		226		
1	1	1	1	15		69	84		104		127		167		187		207		227		
1	1	1	1	15		70	85		105		128		168		188		208		228		
1	1	1	1	15		71	86		106		129		169		189		209		229		
1	1	1	1	15		72	87		107		130		170		190		210		230		
1	1	1	1	15		73	88		108		131		171		191		211		231		
1	1	1	1	15		74	89		109		132		172		192		212		232		
1	1	1	1	15		75	90		110		133		173		193		213		233		
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1	1	1	1	15		77	92		112		135		175		195		215		235		
1	1	1	1	15		78	93		113		136		176		196		216		236		
1	1	1	1	15		79	94		114		137		177		197		217		237		
1	1	1	1	15		80	95		115		138		178		198		218		238		
1	1	1	1	15		81	96		116		139		179		199		219		239		
1	1	1	1	15		82	97		117		140		180		200		220		240		
1	1	1	1	15		83	98		118		141		181		201		221		241		
1	1	1	1	15		84	99		119		142		182		202		222		242		
1	1	1	1	15		85	100		120		143		183		203		223		243		
1	1	1	1	15		86	101		121		144		184		204		224		244		
1	1	1	1	15		87	102		122		145		185		205		225		245		
1	1	1	1	15		88	103		123		146		186		206		226		246		
1	1	1	1	15		89	104		124		147		187		207		227		247		
1	1	1	1	15		90	105		125		148		188		208		228		248		
1	1	1	1	15		91	106		126		149		189		209		229		249		
1	1	1	1	15		92	107		127		150		190		210		230		250		
1	1	1	1	15		93	108														

1 0 0	1 0 0 1	1 0 1 0	1 0 1 1	1 1 0 0	1 1 0 1	1 1 1 0	1 1 1 1
8	9	10	11	12	13	14	15
Ç 200 128 80	É 220 144 90	â 240 160 100	260 176 100	300 192 100	320 208 100	α 340 224 100	≡ 360 240 100
Û 201 129 81	Æ 221 145 91	í 241 161 101	261 177 101	301 193 101	321 209 101	β 341 225 101	± 361 241 101
é 202 130 82	Æ 222 146 92	ó 242 162 102	262 178 102	302 194 102	322 210 102	Γ 342 226 102	≥ 362 242 102
â 203 131 83	ô 223 147 93	ú 243 163 103	263 179 103	303 195 103	323 211 103	Π 343 227 103	≤ 363 243 103
ä 204 132 84	ö 224 148 94	ñ 244 164 104	264 180 104	304 196 104	324 212 104	Σ 344 228 104	ƒ 364 244 104
ä 205 133 85	ö 225 149 95	ñ 245 165 105	265 181 105	305 197 105	325 213 105	σ 345 229 105	ƒ 365 245 105
ä 206 134 86	û 226 150 96	ä 246 166 106	266 182 106	306 198 106	326 214 106	μ 346 230 106	÷ 366 246 106
Ç 207 135 87	Û 227 151 97	o 247 167 107	267 183 107	307 199 107	327 215 107	τ 347 231 107	≈ 367 247 107
ê 210 136 88	ÿ 230 152 98	ı 250 168 108	270 184 108	310 200 108	330 216 108	ø 350 232 108	o 370 248 108
ë 211 137 89	ö 231 153 99	ı 251 169 109	271 185 109	311 201 109	331 217 109	θ 351 233 109	■ 371 249 109
è 212 138 90	ü 232 154 100	ı 252 170 110	272 186 110	312 202 110	332 218 110	Ω 352 234 110	— 372 250 110
ÿ 213 139 91	€ 233 155 101	¼ 253 171 111	273 187 111	313 203 111	333 219 111	δ 353 235 111	√ 373 251 111
î 214 140 92	£ 234 156 102	¼ 254 172 112	274 188 112	314 204 112	334 220 112	∞ 354 236 112	n 374 252 112
ï 215 141 93	¥ 235 157 103	ı 255 173 113	275 189 113	315 205 113	335 221 113	∅ 355 237 113	2 375 253 113
Ä 216 142 94	Pl 236 158 104	« 256 174 114	276 190 114	316 206 114	336 222 114	€ 356 238 114	■ 376 254 114
Â 217 143 95	f 237 159 105	» 257 175 115	277 191 115	317 207 115	337 223 115	∩ 357 239 115	SP 377 255 115

MODE 3 SUPPLEMENTAL CHARACTER SET 2

MR. 12451

MA. 0608-84

CONTROL CHARACTERS

C0 and C1 Control Characters (Set 1)

Name	Mnemonic	Octal Code		Function
		C0	C1	
Null	NUL	00	200	Used in escape sequences.
Bell	BEL	07	207	Sounds bell tone if enabled by switch A7 .
Horizontal tab	HT	11	211	Advances to next horizontal tab, if any. Otherwise, takes no action.
Line feed	LF	12	212	Prints buffer's contents, then advances paper by current line spacing.
Vertical tab	VT	13	213	Prints buffer's contents, then performs line feed.
Form feed	FF	14	214	Advances to next top of form.
Carriage return	CR	15	215	Prints buffer's contents, returns to left margin, and performs line feed if enabled by switch A6 .
Shift out	SO	16	216	Sets double width for all following characters, until next line terminator or DC4 is received.
Shift in	SI	17	217	Sets compressed horizontal pitch for current line and following lines, until DC2 is received.
Device control 2	DC2	22	222	Sets standard horizontal pitch for current line and following lines, until SI is received.

C0 and C1 Control Characters (Set 1) (Cont)

Name	Mnemonic	Octal Code		Function
		C0	C1	
Device control 4	DC4	24	224	Sets single width for all following characters, until SO is received.
Cancel	CAN	30	230	Clears print buffer if enabled by switch A4 .
Escape	ESC	33	233	Starts escape sequences.

C0 Control Characters (Set 2)

Name	Mnemonic	Octal Code	Function
Null	NUL	00	Used in escape sequences.
Heart	–	03	Prints a heart symbol.
Diamond	–	04	Prints a diamond symbol.
Clubs	–	05	Prints a club symbol.
Spade	–	06	Prints a spade symbol.
Bell	BEL	07	Sounds bell tone if enabled by switch A7 .
Horizontal tab	HT	11	Advances to next horizontal tab, if any. Otherwise, takes no action.
Line feed	LF	12	Prints buffer's contents, then advances paper by current line spacing.
Vertical tab	VT	13	Prints buffer's contents, then performs line feed.
Form feed	FF	14	Advance to next top of form.

C0 Control Characters (Set 2) (Cont)

Name	Mnemonic	Octal Code	Function
Carriage return	CR	15	Prints buffer's contents, then returns to left margin. Performs line feed if enabled by switch A6 .
Shift out	SO	16	Sets double width for all following characters, until the next line terminator or DC4 is received.
Shift in	SI	17	Sets compressed horizontal pitch for current line and following lines, until DC2 is received.
Device control 2	DC2	22	Sets standard horizontal pitch for current line and following lines, until SI is received.
Device control 4	DC4	24	Sets single width for all following characters, until SO is received.
Paragraph	-	25	Prints paragraph symbol.
Cancel	CAN	30	Clears print buffer if enabled by switch A4 .
Escape	ESC	33	Starts escape sequences.

ESCAPE SEQUENCES

Vertical Form Handling

Name (Mnemonic)	Sequence	Function
Set vertical pitch (ER8LI)	ESC 0 033 060	Sets vertical pitch to 8 lines per inch.
(ER10LI)	ESC 1 033 061	Sets vertical pitch to 10.3 lines per inch (72/7).
(ERNLI2)	ESC 2 033 062	Sets vertical pitch to the setting specified in a previously issued ESC A sequence. If none was set, sets pitch to 6 lines per inch.
(ERNLI1)	ESC A Pn 033 101 ***	Sets vertical pitch to 72/Pn lines per inch. Does not take effect until ESC 2 is sent.
(ERNLI3)	ESC 3 Pn 033 063 ***	Sets vertical pitch to 216/Pn lines per inch.
(ERNLI4)	ESC J Pn 033 112 ***	Prints buffer's contents and sets vertical pitch to 216/Pn lines per inch for next line feed only.
Set form length (ERSFL)	ESC C Pn 033 103 ***	Sets the form length to the number of inches that equal Pn X current pitch.
(ERSFLI)	ESC C NUL Pn 033 103 000 ***	Sets the form length to Pn inches.

Vertical Form Handling (Cont)

Name (Mnemonic)	Sequence	Function
Set bottom margin (ERSBM)	ESC N Pn 033 116 ***	Sets the bottom margin to Pn lines from the bottom of the page.
Clear bottom margin (ERCBM)	ESC O 033 117	Clears the bottom margin.

Horizontal Form Handling

Name (Mnemonic)	Sequence	Function
Set double-width characters (EREDW)	ESC W >0 033 127 ***	Sets double- width characters for current line and following lines. Any non- zero character as the third charac- ter completes this sequence.
Set single-width characters (ERDDW)	ESC W NUL 033 127 000	Sets single-width characters for current line and following lines.
Carriage return (PCR1)	ESC < 033 074	Performs car- riage return without perform- ing line feed, regardless of current switch setting.

Horizontal Tabs

Name (Mnemonic)	Sequence						Function
Set horizontal tabs (ERSHT)	ESC	D	Pn1	Pn2	Pn	NUL	Sets horizontal tab stops at Pn1, Pn2, and other designated stops. Pn is a character representing the column number of the desired stop. For example, the character DC2 sets a tab at column 18. You can specify up to 16 tabs.
	033	104	***	***	***	000	

Paper Fault Handling

Name (Mnemonic)	Sequence		Function
Disable paper out (ERDPO)	ESC	8	Disables paper-out handling.
	033	056	
Enable paper out (EREPO)	ESC	9	Enables paper-out handling.
	033	057	

Unidirectional/Bidirectional Control

Name (Mnemonic)	Sequence			Function
Set bidirectional printing (ERDUD)	ESC	U	NUL	Prints lines in bidirectional mode.
	033	074	000	
Set unidirectional Printing (EREUD)	ESC	U	>0	Prints lines from left to right only. Any nonzero character as the third character completes this sequence.
	033	074	***	

Alternate Character Set Mapping

Name (Mnemonic)	Sequence	Function
Select set 2 (ERC02)	ESC 6 033 066	Selects the alternate char- acter set (set 2).
Select set 1 (ERC01)	ESC 7 033 067	Selects charac- ter set 1. (This character set is the default set when the printer is powered on.)

Printing Modes

Name (Mnemonic)	Sequence	Function
Enable bold (EREBD)	ESC E 033 105	Sets bold printing for all following characters.
Disable bold (ERDBD)	ESC F 033 106	Turns off bold printing for all following characters.
Set high resolution (EREHR)	ESC G 033 107	Enters high resolution mode.
Set low resolution (ERDHR)	ESC H 033 108	Enters low resolution mode.
Set underline (EREUL)	ESC - >0 033 045 ***	Underlines all following charac- ters. Any nonzero character as the third character completes this sequence.
Reset underline (ERDUL)	ESC - NUL 033 045 000	Turns off under- lining for all following characters.

Printing Modes (Cont)

Name (Mnemonic)	Sequence	Function
Enable superscript (ERESCR)	ESC S NUL 033 123 000	Prints all following characters in superscript mode.
Enable subscript (ERESCR)	ESC S >0 033 123 ***	Prints all following characters in subscript mode. Any non-zero character as the third character completes this sequence.
Reset script and directional printing (ERDSCR)	ESC T 033 124	Resets script setting to no script and resets printing mode to bidirectional.

Graphics Mode

Name (Mnemonic)	Sequence	Function
60 DPI graphics (ERGR6)	ESC K Pn1 Pn2 033 113 *** ***	Enter 60 dots per inch for the next n bytes. Pn1 and Pn2 together specify the number of bytes according to the formula $n = (256 \times Pn2) + Pn1$ <p>The total must be less than the remainder of bytes in the line buffer. If the buffer is empty, the total must be less than 480 (8-inch paper selected) or less than 780 (13-inch paper selected).</p>

Graphics Mode (Cont)

Name (Mnemonic)	Sequence	Function
132 DPI graphics (ERGR12)	ESC L Pn1 Pn2 033 114 *** **	<p>Enter 132 dots per inch for the next n bytes. Pn1 and Pn2 together specify the number of bytes according to the formula</p> $n = (256 \times Pn2) + Pn1$ <p>The total must be less than the remainder of bytes in the line buffer. If the buffer is empty, the total must be less than 960 (8-inch paper selected) or less than 1740 (13-inch paper selected).</p>
132 DPI graphics (ERGS12)	ESC Y Pn1 Pn2 033 131 *** **	<p>Enter 132 dots per inch for the next n bytes. Pn1 and Pn2 together specify the number of bytes according to the formula</p> $n = (256 \times Pn2) + Pn1$ <p>The total must be less than the remainder of bytes in the line buffer. If the buffer is empty, the total must be less than 960 (8-inch paper selected) or less than 1740 (13-inch paper</p>

Graphics Mode (Cont)

Name (Mnemonic)	Sequence	Function
220 DPI graphics (ERGD24)	ESC Z Pn1 Pn2 033 132 *** **	<p>selected). ESC Y prints every other dot.</p> <p>Enter 220 dots per inch for the next n bytes. Pn1 and Pn2 together specify the number of bytes according to the formula</p> $n = (256 \times Pn2) + Pn1$ <p>The total must be less than the remainder of bytes in the line buffer. If the buffer is empty, the total must be less than 1920 (8-inch paper selected) or less than 2895 (13-inch paper selected). ESC Z prints one dot in any three consecutive positions.</p>

