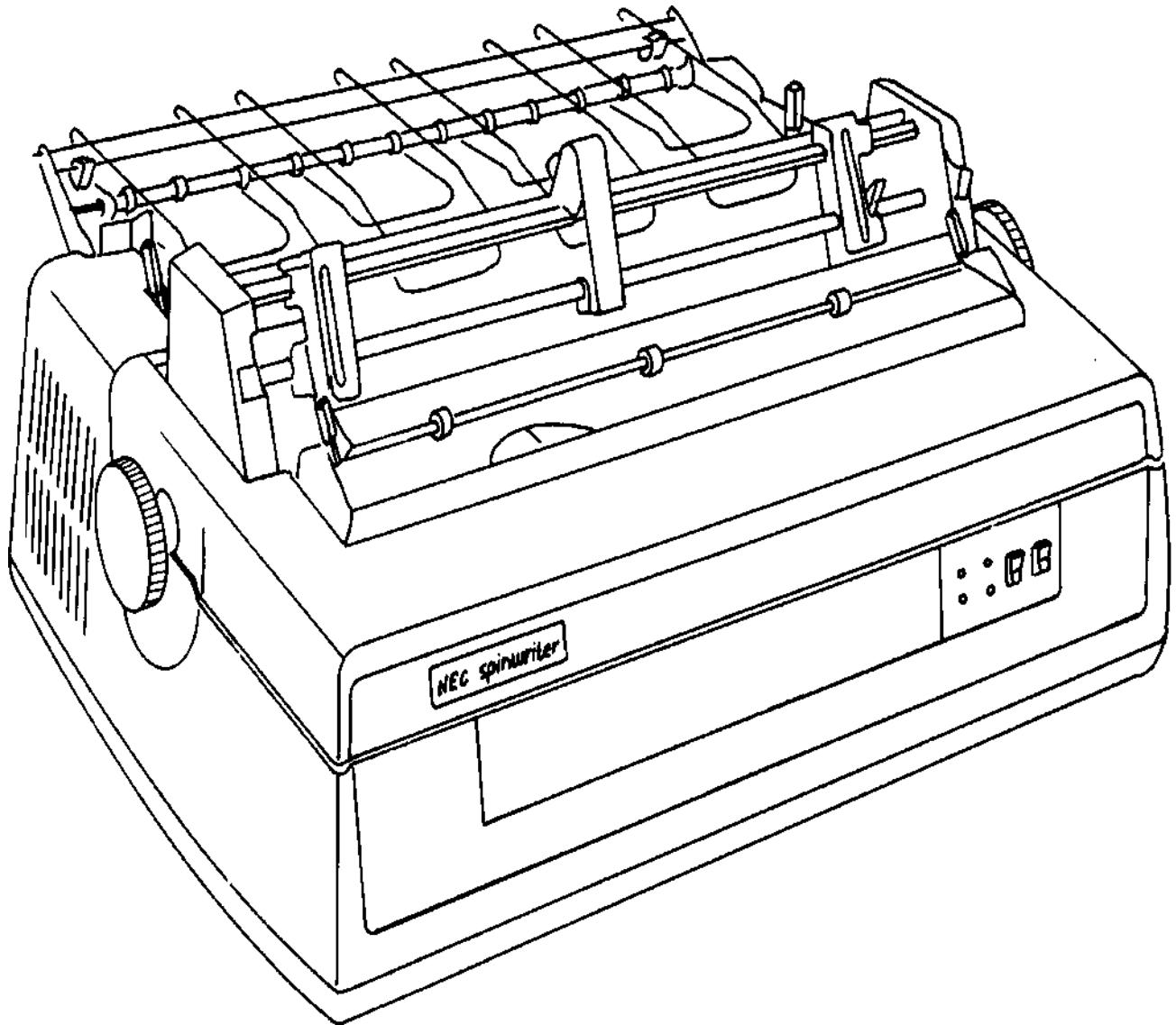


# Comprehensive Support Document

spinwriter 5500

Revision Date: 1/20/94



**Question:** I have a NEC Spinwriter 5500 Printer and I am using the WordPerfect Software Version 5.1. I need to know what software driver to select from the list of printers which is included with the software.

**Answer:** Below is a list of printer drivers which may be selected in order to support the NEC Spinwriter 5500 Printer line under DOS based software application packages.

<b><u>NEC Model</u></b>	<b><u>Software Driver Selection/Emulation</u></b>
NEC 5510	NEC 2010, 3510, 7710 or 8810 Spinwriter. Receive Only ANSI Terminal.
NEC 5515	NEC 2015, 3515, 7715 or 8815 Spinwriter. NEC 2030, 3530, 7730 or 8830 Spinwriter. Receive Only Diablo 1610 Replacement Printer.
NEC 5520	Keyboard Send/Receive ANSI Terminal.
NEC 5525	Keyboard Send/Receive Diablo 1620 Replacement Printer.
NEC 5530	Receive Only Centronics Type Printer.
NEC 5540	Keyboard Send/Receive APL-ASCII Terminal.
NEC 5500D	OEM'd to Diablo Corporation as a 1345 Type Printer. 12 Bit interface.
NEC 5500B	8 Bit Naked Interface Printer.
NEC 5500Q	OEM'd to Qume Corporation. 12 Bit Interface.
NEC 5500N	Ontel Type Printer.
NEC 5508	OEM'd to Honeywell Corporation.

\* If the software application which is currently being utilized does not list any of the above listed printer driver options, then you may either select a Generic Text Printer driver or, you can contact the software manufacturer to see if they

Model 5530 Specifications

PERFORMANCE SPECIFICATIONS	
Print Speed	55 characters per second at 12 characters per inch (maximum) bi-directional
Print Line	136 columns at 10 characters/inch 163 columns at 12 characters/inch
Impression Control	4 steps, automatic (for every character) 3 steps, manual
Paper Width	16 inches (maximum)
Character Set	128 characters (maximum)
Copy Thickness Control	5-step switching by operator
Paper Thickness	0.027 inch (maximum)
Paper Movement	Forward or reverse, up or down
Carriage Return Time	400 milliseconds (maximum)/136 characters
Horizontal Resolution	120 increments/inch
Horizontal Tabulation	Absolute position addressable right and left
Vertical Resolution	48 increments/inch
Vertical Tabulation	Absolute position addressable - up and down
Line Feed Speed	4.16 inch/second plus 53 ms settling time
Spacing Speed	16 milliseconds at 12 characters/inch
Form Feed	1 to 99 lines (maximum)
Line Feed	6 or 8 lines per inch (forward/reverse)
Test Print	Prints stored print test set
Interface Type	Centronics-type, parallel
Communication Code	ASCII
Receive Buffer	132, 136, 158 or 163 characters (switch selectable)

Model 5530 Specifications (cont'd)

DIMENSIONS	
Width	24.8 inches (630 mm) (including platen knobs)
Depth	16.34 inches (415 mm)
Height	8.68 inches (220.5 mm)
Weight	45.5 pounds (20.7 Kg) (including covers and power supply)
POWER REQUIREMENTS	
Input Power	115 Vac, +15%, 3.5 amps, 50/60 Hz, +5% -3% or 230 Vac, +15%, 2 amps, 50/60 Hz, +5% -3%
Power Consumption	80 watts (standby) 180 watts (operating)
ENVIRONMENTAL SPECIFICATIONS	
Operating Noise Level	60 dBA with covers
Temperature	Operating: 40°F to 100°F (5°C to 38°C) Storage: -4°F to 158°F (-20°C to 70°C)
Relative Humidity	Operating: 10% to 85% Storage: 10% to 95% (Without Condensation)
Altitude	Operating: Sea Level to 10,000 Ft. Storage: Sea level to 25,000 Ft.

Models 5510, 5515, 5520, and 5525 Specifications

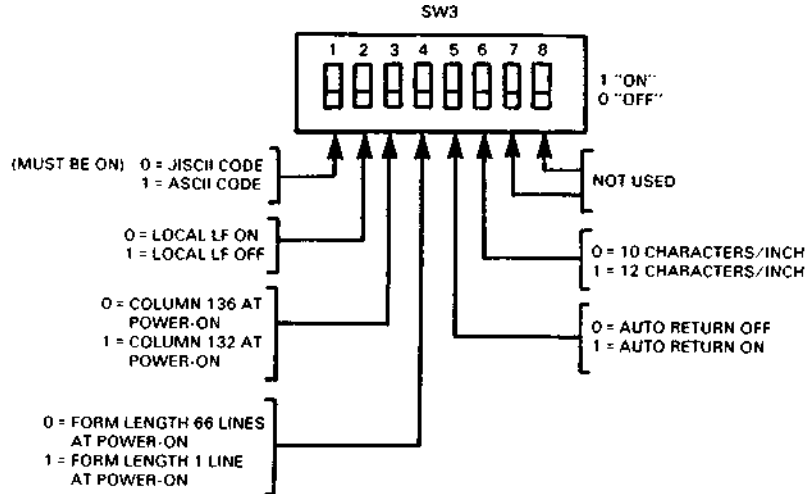
PERFORMANCE SPECIFICATIONS	
Print Speed	55 characters per second at 12 characters per inch (maximum) bi-directional  With Serial Interface: 10 cps @ 110 baud, 30 cps @ 300 baud 15 cps @ 150 baud, 55 cps @ 600 baud (max) 20 cps @ 200 baud, 55 cps @ 1200 baud (max)
Print Line	136 columns at 10 characters/inch 163 columns at 12 characters/inch
Impression Control	3-step by operator
Paper Width	16 inches (maximum)
Character Set	128 characters (maximum), fully-formed
Copy Thickness Control	5-step switching by operator
Paper Thickness	Up to 0.027 inch
Paper Movement	Forward or reverse, up or down
Carriage Return Time	400 milliseconds (maximum)
Horizontal Resolution	120 increments per inch
Horizontal Tabulation	Normal and addressable - right and left
Vertical Resolution	48 increments per inch
Vertical Tabulation	Normal and addressable - up and down
Line Feed Speed	4.16 inch per second (53 ms settling time)
Spacing Speed	16 milliseconds at 12 characters per inch
Form Feed	1 to 99 lines (maximum)

Models 5510, 5515, 5520, and 5525 Specifications (cont'd)

PERFORMANCE SPECIFICATIONS (cont'd)	
Line Feed	6 or 8 lines-per-inch (forward/reverse)
Test Print	Prints stored print test set
SERIAL INTERFACE SPECIFICATIONS	
Compatibility	Electrically compatible with EIA RS-232-C and CCITT V.24
Communication	ASCII, Half or Full Duplex
Error Detection	Even/Odd parity Framing/Overrun error detection
Transmission Rate	110, 150, 300 Baud 110, 200, 300 Baud 110, 300, 600 Baud 110, 300, 1200 Baud
Receive Buffer	256 Characters
Transmit Buffer	16 Characters
Protocol	ETX/ACK or X-ON/X-OFF REVERSE CHANNEL
DIMENSIONS	
Models 5510 and 5515 (RO)	Width: 24.8 inches (630 mm) (including platen knobs) Depth: 16.34 inches (415 mm) Height: 8.68 inches (220.5 mm) 9.8 inches (250 mm) with higher silencer hood
Models 5520 and 5525 (KSR)	Width: 24.8 inches (630 mm) (including platen knobs) Depth: 21.1 inches (535 mm) Height: 8.68 inches (220.5 mm) 9.8 inches (250 mm) with higher silencer hood
POWER REQUIREMENTS	
Input Power	115 Vac, $\pm 15\%$ , 3.5 amps, 50/60 Hz, $\pm 5\%$ -3% or 230 Vac, $\pm 15\%$ , 2 amps, 50/60 Hz, $\pm 5\%$ -3%

Models 5510, 5515, 5520, and 5525 Specifications  
(cont'd)

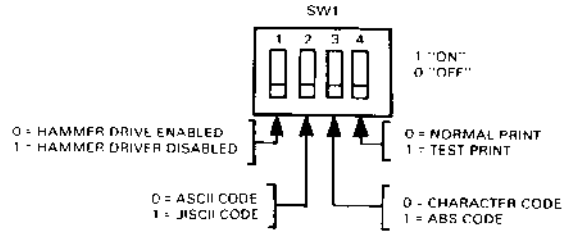
WEIGHT	
Models 5510 and 5515 (RO)	45.5 pounds (20.7 Kg)
Models 5520 and 5525 (KSR)	51.0 pounds (23.2 Kg)
ENVIRONMENTAL SPECIFICATIONS	
Operating Noise Level	60 dBA with cover 67 dBA without cover
Temperature	Operating: 40°F to 100°F (5°C to 38°C) Storage: -4°F to 158°F (-20°C to 70°C)
Humidity	Operating: 30% to 85% Storage: 10% to 95% (Without Condensation)
Altitude	Operating: Sea Level to 10,000 Ft. Storage: Sea level to 25,000 Ft.



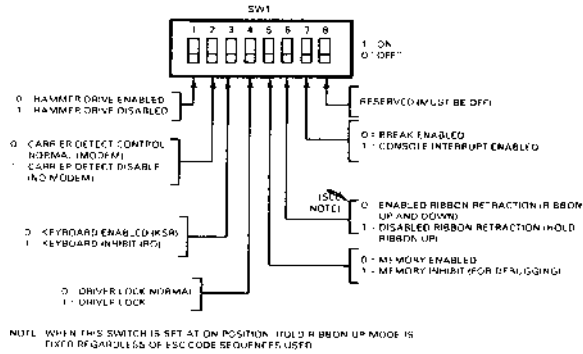
NOTES:

- SW1 - 5 THRU 8 ARE SET "OFF" WHEN THE PRINTER IS EQUIPPED WITH AN OPERATOR CONTROL PANEL.
- SW3 - 4 CONTROLS FORM LENGTH ONLY WHEN THE OPERATOR CONTROL PANEL IS NOT INSTALLED. WITH THE CONTROL PANEL INSTALLED, FORM LENGTH IS SET USING THE FORM LENGTH SWITCH MOUNTED ON THE CONTROL PANEL.

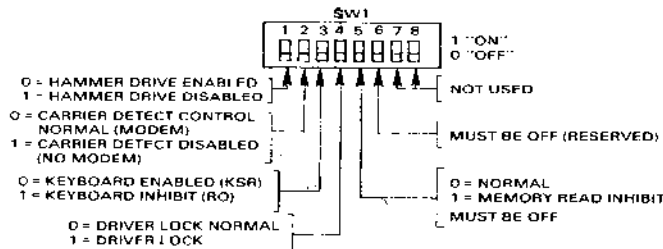
5500 G9BNB/G9GKZ PCBs SW3 Switch Functions



5500 G9CUT PCB SW1 Switch Functions



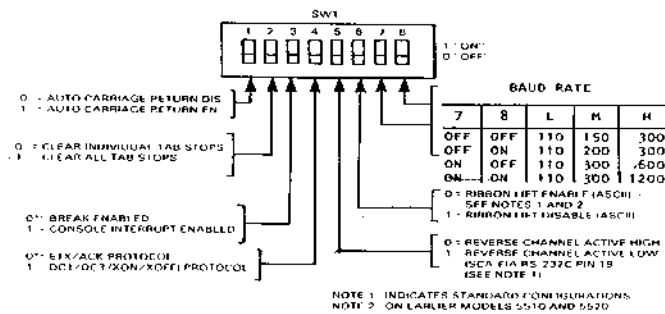
5500 G9DWJ PCB (5540) SW1 Switch Functions



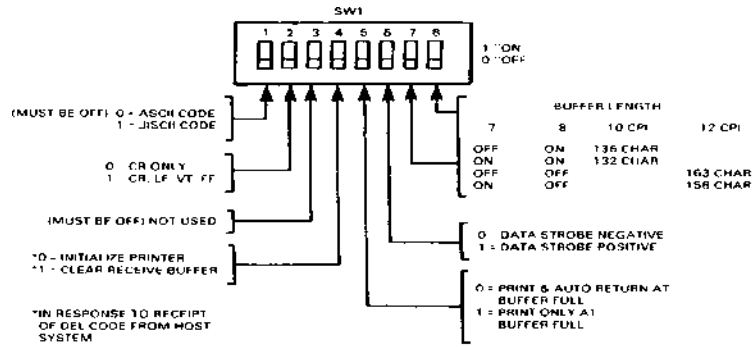
5500 G9GLB PCB SW1 Switch Functions (Later 5510, 5520 Models)

**NOTE**

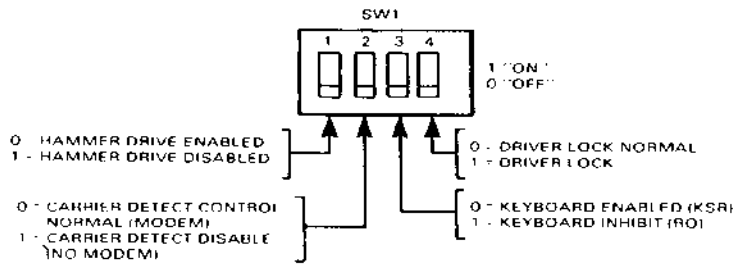
The G9CUR and G9GLB PCBs are interchangeable.



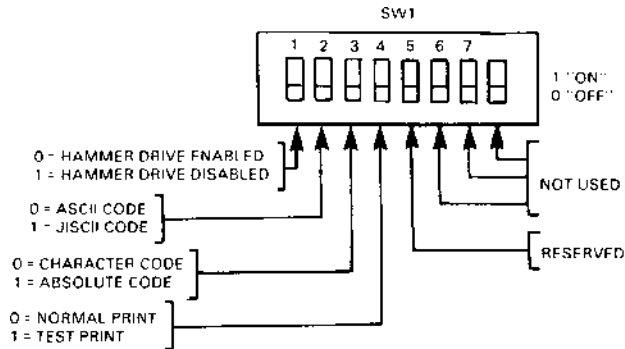
G9BNF (5520), G9DGD (5510), G9EYQ (5540) SW1 Switch Functions



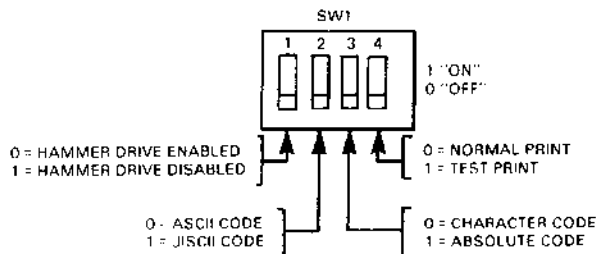
5500 G9BNA PCB SW1 Switch Functions



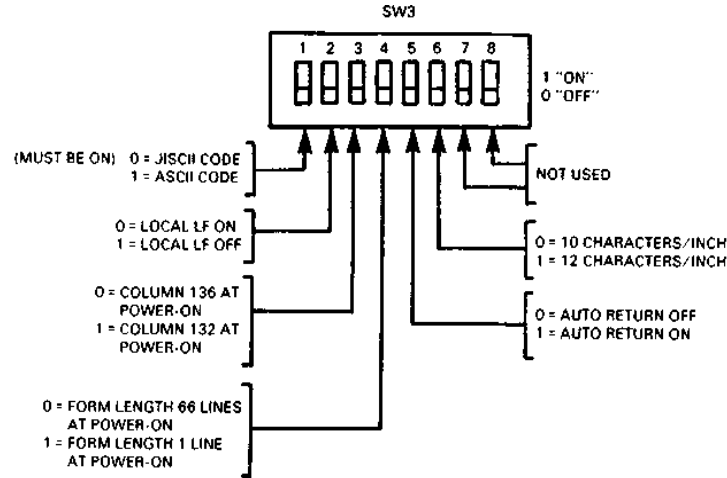
5500 G9CUR PCB SW1 Switch Functions (Early 5510, 5520 Models)



5500 G9CUQ PCB SW1 Switch Functions



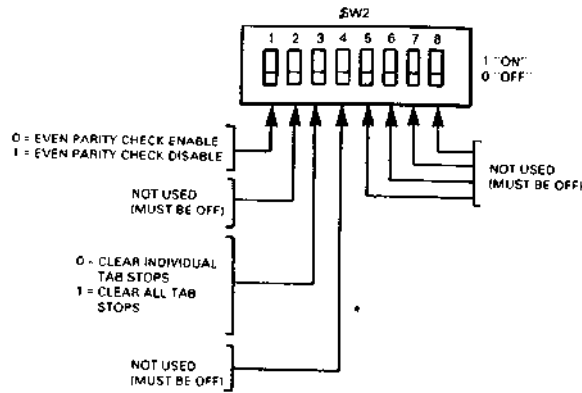
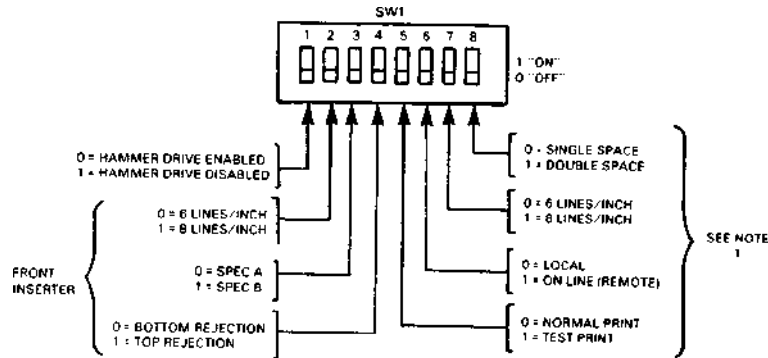
5500 G9CUP PCB SW1 Switch Functions



**NOTES:**

- SW1 - 5 THRU 8 ARE SET "OFF" WHEN THE PRINTER IS EQUIPPED WITH AN OPERATOR CONTROL PANEL.
- SW3 - 4 CONTROLS FORM LENGTH ONLY WHEN THE OPERATOR CONTROL PANEL IS NOT INSTALLED. WITH THE CONTROL PANEL INSTALLED, FORM LENGTH IS SET USING THE FORM LENGTH SWITCH MOUNTED ON THE CONTROL PANEL.

### 5500 G9BNB/G9GKZ PCBs SW3 Switch Functions



### 5500 G9BNB/G9GKZ PCBs SW1, SW2 Switch Functions



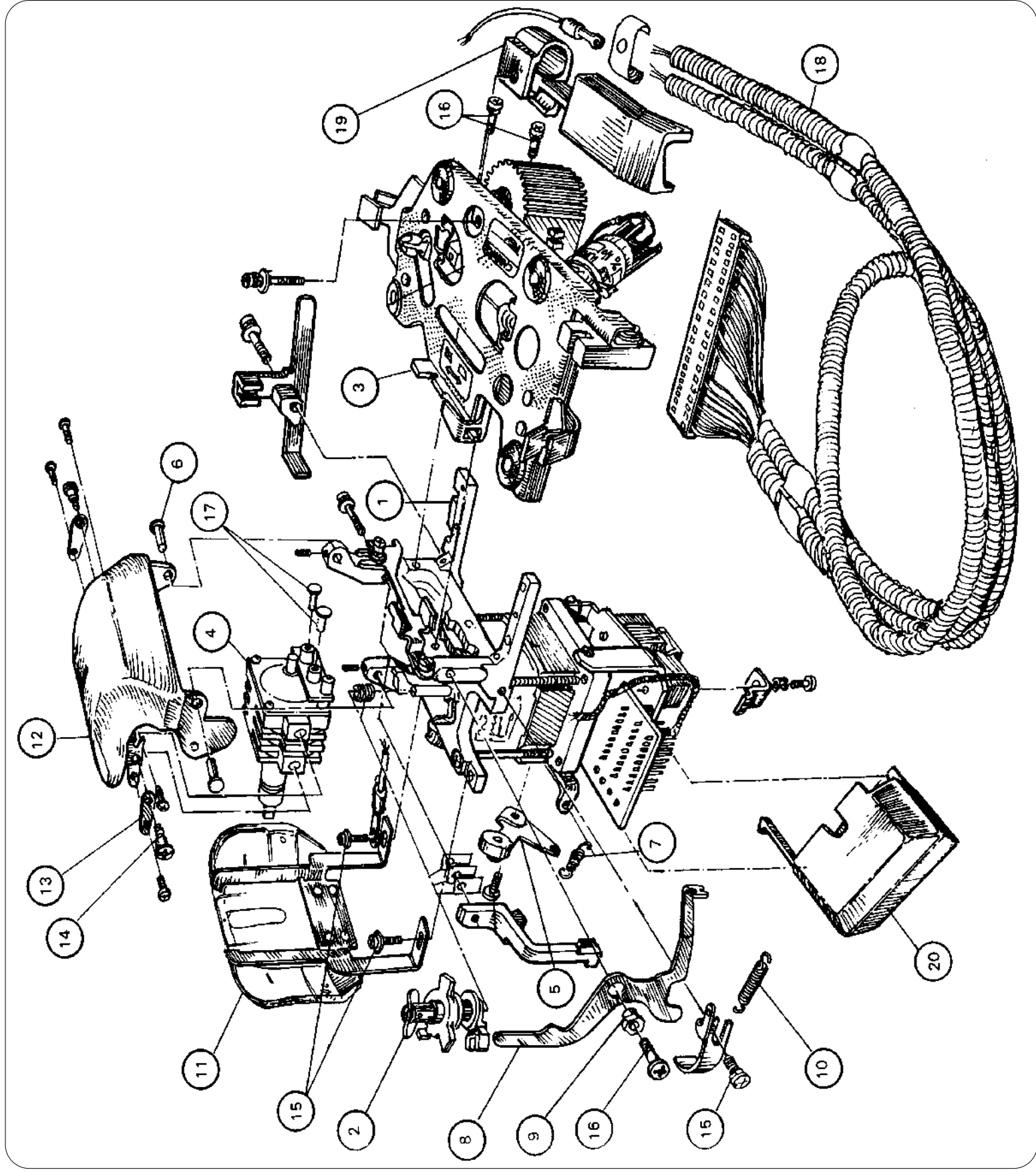
## Carriage assy

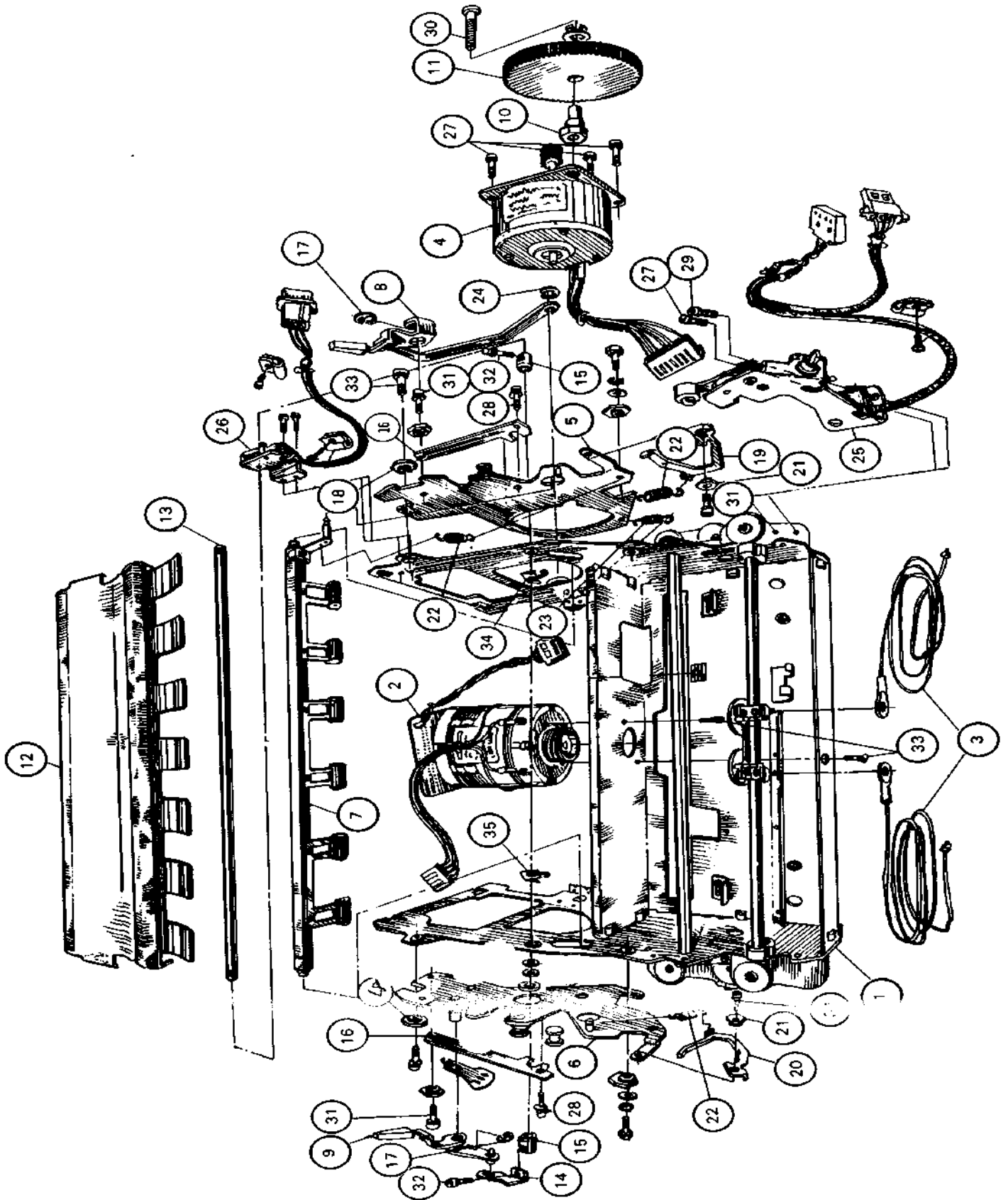
TEM	DESCRIPTION	PART NUMBER
1	Rotate Motor	136-031573-B
2	Vertical Slide (See Figure 32)	136-031577-A
3	Ribbon Base Ass'y	136-031575-002B
4	Print Hammer	136-032022-B
5	Bearing Holder	136-720287-A
6	Stud	136-710139-A
7	Spring	136-720250-A
8	Lock Lever	136-711966-A
9	Eccentric Stud	136-711967-A
10	Lock Lever Spring	136-711968-A
11	Card Holder	136-720571-A
12	Hammer Cover	136-720288-A
13	Position Plate	136-712201-A
14	Shoulder Screw	136-723810-A
15	3×8×15BF	805-300003-0080
16	3×8×15BF	805-310003-0080
17	2×4×15BF	805-330003-0040
18	Carriage Cable	136-031579-002A
19	Cable Clamp A	136-723807-A
20	Inductosyn Cvr	136-723805-A

## Frame assy

ITEM	DESCRIPTION	PART NUMBER
1	Frame Assembly	136-031581-A
2	Spacing Motor	136-031583-A
3	Wire Rope	808-805038-030A
4	Line Feed Motor	136-031585-A
5	RT Line Feed	136-722871-001-A
6	LF Line Feed	136-722871-002-A
7	Pressure Ass'y	136-723002-A
8	Pressure Lever	136-722873-A
9	Control Lever	136-722827-A
10	Line Feed Idler Gear Bushing	136-722720-A
11	Line Feed Idler Gear	136-722721-A
12	Paper Guide	136-722756-A
13	Control Shaft	136-722741-A
14	Control Arm	136-722743-A
15	Control Cam	136-722740-A
16	Control Follower Plate	136-722742-A
17	E-Ring	803-010030-0500
18	Line Feed Slide Bearing	136-722714-A
19	Platen Lever R	136-723435-001A
20	Platen Lever L	136-723435-002A
21	Eccentric Bushing	136-710035-A
22	Platen Clamp	136-723969-A
23	Line Feed Frame Spring	136-720390-A
24	E-Ring	803-010030-0320
25	Switch Assembly	136-722885-A
26	Paper Out Switch	136-722888-B
27	3×8×15BF	805-300003-0080
28	3×6×15BF	805-300003-0060
29	3×10×15BF	805-300003-0100
30	6×30×15BF	805-300006-0300
31	3×7×15BF	805-330003-0070
32	3×8×15BF	805-310003-0080
33	4×10×15BF	805-330004-0100
34	FG Plate Right	136-723971-001A
35	FG Plate Left	136-723971-002A

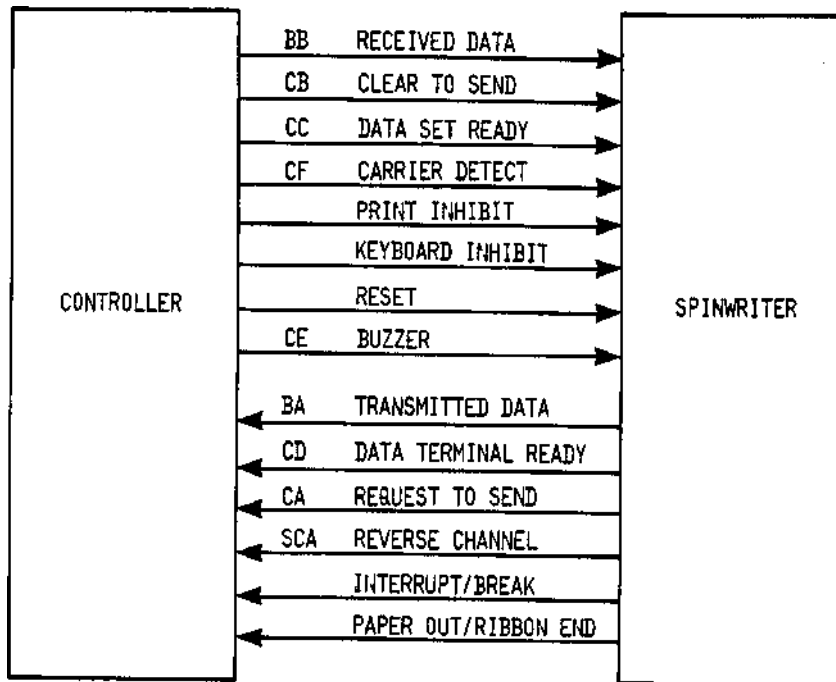
Note: the 5500 series has been end of life on service and parts are only available until current inventory has been depleted.





## Serial Interface Cable Connectors Pin Assignments

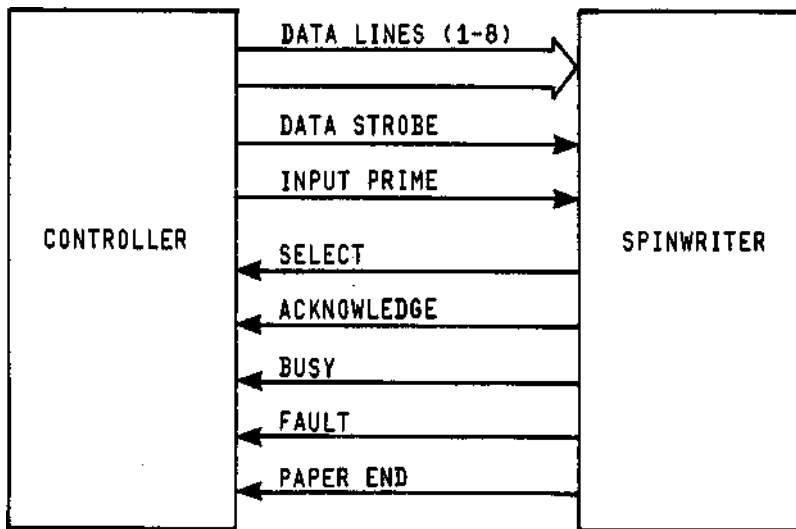
EIA CONNECTOR PIN NO.	SPINWRITER CONNECTOR CN30	CIRCUIT		EIA SIGNAL NAME
		EIA	CCITT	
2	1	BA	103	TRANSMITTED DATA
3	2	BB	104	RECEIVED DATA
4	3	CA	105	REQUEST TO SEND
5	4	CB	106	CLEAR TO SEND
6	5	CC	107	DATA SET READY
7	6	AB	102	SIGNAL GROUND
8	7	CF	109	CARRIER DETECT
11	12	-	-	RESET*
18	10	-	-	KEYBOARD INHIBIT*
19	8	SCA	120	REVERSE CHANNEL
20	9	CD	108	DATA TERMINAL READY
21	11	-	-	PRINT INHIBIT*
22	13	CE	-	BUZZER*
23	14	-	-	PAPER OUT/RIBBON END*
25	15	-	-	INTERRUPT/BREAK*



Serial Interface

## Centronics-Type Interface Connector Pin Assignments

CNIFC PIN NO.	SIGNAL	CNIFC PIN NO.	SIGNAL
1	DATA STROBE	19	TWISTED PAIR GND
2	DATA 1	20	TWISTED PAIR GND
3	DATA 2	21	TWISTED PAIR GND
4	DATA 3	22	TWISTED PAIR GND
5	DATA 4	23	TWISTED PAIR GND
6	DATA 5	24	TWISTED PAIR GND
7	DATA 6	25	TWISTED PAIR GND
8	DATA 7	26	TWISTED PAIR GND
9	DATA 8	27	TWISTED PAIR GND
10	ACKNOWLEDGE	28	TWISTED PAIR GND
11	BUSY	29	TWISTED PAIR GND
12	PAPER END	30	INPUT PRIME RETURN
13	SELECT	31	INPUT PRIME
14	SIGNAL GROUND	32	FAULT
16	SIGNAL GROUND	33	GND
17	CHASSIS GROUND		



Centronics-Type Interface Lines

## 5530 ASCII CODES


MSB \ LSB		5530 ASCII CODES							
		0 000	1 001	2 010	3 011	4 100	5 101	6 110	7 111
0	0000	NULL	DL* ESCAPE	SP	0	@	P	^	p
1	0001	START HDG	DC+ 1	!	1	A	Q	a	q
2	0010	START TEXT	DC+ 2	"	2	B	R	b	r
3	0011	END TEXT	DC+ 3	#	3	C	S	c	s
4	0100	END TRANS	DC+ 4 (STOP)	\$	4	D	T	d	t
5	0101	ENQUIRY	NEG ACK	%	5	E	U	e	u
6	0110	ACK	SYNC IDLE	&	6	F	V	f	v
7	0111	BELL	END TRANS BLK	'	7	G	W	g	w
8	1000	BACKSPACE	CANCEL	(	8	H	X	h	x
9	1001	HORIZ TAB	END MEDIUM	)	9	I	Y	i	y
A	1010	LINE FEED	SUBSTITUTE	*	:	J	Z	j	z
B	1011	VERT TAB	ESCAPE	+	;	K	[	k	{
C	1100	FORM FEED	FILE SEP	,	<	L	\	l	
D	1101	RETURN	GROUP SEP	-	=	M	]	m	}
E	1110	SHIFT OUT	RECORD SEP	.	>	N	^	n	~
F	1111	SHIFT IN	UNIT SEP	/	?	O	_	o	DELETE

## SPACING AND FORMS ADVANCE CONTROLL

		Spacing		Form Advance	
1st	2nd	3rd	(inches)	3rd	(inches)
ESC	]	@	0	P	1/48
		A	1/120	Q	2/48
		B	2/120	R	3/48
		C	3/120	S	4/48
		D	4/120	T	5/48
		E	5/120	U	6/48 (1/8)
		F	6/120	V	7/48
		G	7/120	W	8/48 (1/6)
		H	8/120	X	9/48
		I	9/120	Y	10/48
		J	10/120 (1/12)	Z	11/48
		K	11/120	[	12/48
		L	12/120 (1/10)	\	13/48
		M	13/120	]	14/48
		N	14/120	^	15/48
O	15/120	_	16/48		


## ABSOLUTE VERTICAL

1st	Reverse				Forward			
	ESC				ESC			
2nd	X		Y		Z		[	
3rd	@	P	@	P	@	P	@	P
0	16	32	48	0	16	32	48	
A	17	33	49	A	17	33	49	
B	18	34	50	B	18	34	50	
C	19	35	51	C	19	35	51	
D	20	36	52	D	20	36	52	
E	21	37	53	E	21	37	53	
F	22	38	54	F	22	38	54	
G	23	39	55	G	23	39	55	
H	24	40	56	H	24	40	56	
I	25	41	57	I	25	41	57	
J	26	42	58	J	26	42	58	
K	27	43	59	K	27	43	59	
L	28	44	60	L	28	44	60	
M	29	45	61	M	29	45	61	
N	30	46	62	N	30	46	62	
O	31	47	63	O	31	47	63	

CHARACTER KEY  TAB POSITION

## ABSOLUTE HORIZONTAL

1st	ESC									
2nd	P	Q	R	S	T	U				
3rd	@	P	@	P	@	P	@	P	@	P
1	17	33	49	65	81	97	113	129	145	161
A	18	34	50	66	82	98	114	130	146	162
B	19	35	51	67	83	99	115	131	147	163
C	20	36	52	68	84	100	116	132	148	
D	21	37	53	69	85	101	117	133	149	
E	22	38	54	70	86	102	118	134	150	
F	23	39	55	71	87	103	119	135	151	
G	24	40	56	72	88	104	120	136	152	
H	25	41	57	73	89	105	121	137	153	
I	26	42	58	74	90	106	122	138	154	
J	27	43	59	75	91	107	123	139	155	
K	28	44	60	76	92	108	124	140	156	
L	29	45	61	77	93	109	125	141	157	
M	30	46	62	78	94	110	126	142	158	
N	31	47	63	79	95	111	127	143	159	
O	32	48	64	80	96	112	128	144	160	

CHARACTER KEY  TAB POSITION

## 5510/20 CODES

ASCII CODING CHART

b7 b6 b5 b4 b3 b2 b1 Column 1		COMMUNICATION CODES		PRINTABLE CHARACTERS						
		0	0	0	0	1	0	1	1	1
		0	0	0	1	0	1	0	1	0
0	0	0	0	NUL	DL	SP				
0	0	0	1	SOH	DC1		A	Q		
0	0	1	0	STX	DC2		B	R		
0	0	1	1	ETX	DC3		C	S		
0	1	0	0	EOT	DC4		D	T		
0	1	0	1	ENQ	NAK		E	U		
0	1	1	0	ACK	SYN		F	V		
0	1	1	1	BEL	ETB		G	W		
1	0	0	0	BS	CAN		H	X		
1	0	0	1	HT	EM		I	Y		
1	0	1	0	LF	SLR		J	Z		
1	0	1	1	VT	ESC		K	[		
1	1	0	0	FF	FS		L	\		
1	1	0	1	CR	GS		M	]		
1	1	1	0	SO	RS		N	^		
1	1	1	1	SI	US		O	_		DEL

Note  
Both column 4 ~ 5 (capital letter) and column 6 ~ 7 (small letter) in ASCII code table of all ESC code sequences have same function.  
(Except DEL code)

### CONTROL CODES

Signal	Name
ETX	End of Text
ACK	Acknowledge
BEL	Bell
BS	Backspace
HT	Horizontal Tab
LF	Line Feed
VT	Vertical Tab
FF	Form Feed
CR	Carriage Return
SO	Shift Out
SI	Shift In
DC1	Device Control 1
DC3	Device Control 3
ESC	Escape

ABSOLUTE HORIZONTAL TAB

Table 1

1st		ESC															
2nd	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_	
	1	17	33	49	65	81	97	113	129	145	161	177	193	209	225	241	
3rd	A	2	18	34	50	66	82	98	114	130	146	162	178	194	210	226	
	B	3	19	35	51	67	83	99	115	131	147	163	179	195	211	227	
	C	4	20	36	52	68	84	100	116	132	148	164	180	196	212	228	
	D	5	21	37	53	69	85	101	117	133	149	165	181	197	213	229	
	E	6	22	38	54	70	86	102	118	134	150	166	182	198	214	230	
	F	7	23	39	55	71	87	103	119	135	151	167	183	199	215	231	
	G	8	24	40	56	72	88	104	120	136	152	168	184	200	216	232	
	H	9	25	41	57	73	89	105	121	137	153	169	185	201	217	233	
	I	10	26	42	58	74	90	106	122	138	154	170	186	202	218	234	
	J	11	27	43	59	75	91	107	123	139	155	171	187	203	219	235	
	K	12	28	44	60	76	92	108	124	140	156	172	188	204	220	236	
	L	13	29	45	61	77	93	109	125	141	157	173	189	205	221	237	
	M	14	30	46	62	78	94	110	126	142	158	174	190	206	222	238	
	N	15	31	47	63	79	95	111	127	143	159	175	191	207	223	239	
	O	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	

ASCII Code  $\longleftrightarrow$  Column Address

### ESCAPE SEQUENCES (TWO LEVEL)

ESC 1	Set Horizontal Tab
ESC 2	Reset Horizontal Tab (Individual)
ESC 3	Print in Red
ESC 4	Print in Black
ESC 5	Set Vertical Tab
ESC 6	Reset Vertical Tab (Individual)
ESC 7	Clear all Tabs and FF Length
ESC 9	Reverse Line Feed
ESC <	Reverse Print (Right-to-Left) On
ESC =	Read and Store Operator Control Switches
ESC >	Forward Print (Left-to-Right) On
ESC ?	Set Format Mode
ESC @ or `	Reset Format Mode
ESC J or j	Set Right Margin
ESC K or k	Reset Right Margin
ESC L or l	Set FF Length
ESC M or m	Set Left Margin
ESC O or o	Reset Left Margin



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## SPACING CONTROL AND FORM ADVANCE CONTROL

1st	2nd	Spacing		Form Advance	
		3rd	(inches)	3rd	(inches)
ESC	J	@	0	P	1/48
		A	1/120	Q	2/48
		B	2/120	R	3/48
		C	3/120	S	4/48
		D	4/120	T	5/48
		E	5/120	U	6/48 (1/8)
		F	6/120	V	7/48
		G	7/120	W	8/48 (1/6)
		H	8/120	X	9/48
		I	9/120	Y	10/48
		J	10/120 (1/12)	Z	11/48
		K	11/120	[	12/48
		L	12/120 (1/10)	\	13/48
		M	13/120	]	14/48
		N	14/120	^	15/48
O	15/120	-	16/48		

### RELATIVE VERTICAL TAB

Table 2

1st	Reverse				Forward			
	ESC				ESC			
2nd	X	Y	Z	I	X	Y	Z	I
3rd	@ 0 P 16	@ 32 P 48	@ 64 P 80	@ 96 P 112	@ 0 P 16	@ 32 P 48	@ 64 P 80	@ 96 P 112
	A 1 Q 17	A 33 Q 49	A 65 Q 81	A 97 Q 113	A 1 Q 17	A 33 Q 49	A 65 Q 81	A 97 Q 113
	B 2 R 18	B 34 R 50	B 66 R 82	B 98 R 114	B 2 R 18	B 34 R 50	B 66 R 82	B 98 R 114
	C 3 S 19	C 35 S 51	C 67 S 83	C 99 S 115	C 3 S 19	C 35 S 51	C 67 S 83	C 99 S 115
	D 4 T 20	D 36 T 52	D 68 T 84	D 100 T 116	D 4 T 20	D 36 T 52	D 68 T 84	D 100 T 116
	E 5 U 21	E 37 U 53	E 69 U 85	E 101 U 117	E 5 U 21	E 37 U 53	E 69 U 85	E 101 U 117
	F 6 V 22	F 38 V 54	F 70 V 86	F 102 V 118	F 6 V 22	F 38 V 54	F 70 V 86	F 102 V 118
	G 7 W 23	G 39 W 55	G 71 W 87	G 103 W 119	G 7 W 23	G 39 W 55	G 71 W 87	G 103 W 119
	H 8 X 24	H 40 X 56	H 72 X 88	H 104 X 120	H 8 X 24	H 40 X 56	H 72 X 88	H 104 X 120
	I 9 Y 25	I 41 Y 57	I 73 Y 89	I 105 Y 121	I 9 Y 25	I 41 Y 57	I 73 Y 89	I 105 Y 121
	J 10 Z 26	J 42 Z 58	J 74 Z 90	J 106 Z 122	J 10 Z 26	J 42 Z 58	J 74 Z 90	J 106 Z 122
	K 11 [ 27	K 43 [ 59	K 75 [ 91	K 107 [ 123	K 11 [ 27	K 43 [ 59	K 75 [ 91	K 107 [ 123
	L 12 \ 28	L 44 \ 60	L 76 \ 92	L 108 \ 124	L 12 \ 28	L 44 \ 60	L 76 \ 92	L 108 \ 124
	M 13 ] 29	M 45 ] 61	M 77 ] 93	M 109 ] 125	M 13 ] 29	M 45 ] 61	M 77 ] 93	M 109 ] 125
	N 14 ^ 30	N 46 ^ 62	N 78 ^ 94	N 110 ^ 126	N 14 ^ 30	N 46 ^ 62	N 78 ^ 94	N 110 ^ 126
	O 15 - 31	O 47 - 63	O 79 - 95	O 111 - 127	O 15 - 31	O 47 - 63	O 79 - 95	O 111 - 127

ASCII Code  Number of lines

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## ASCII CODING CHART

					COMMUNICATION CODES		PRINTABLE CHARACTERS								
					0	0	0	0	1	1	1	1	1		
					0	0	1	0	1	0	1	0	1		
					0	1	2	3	4	5	6	7			
					0	1	2	3	4	5	6	7			
b7	b6	b5	b4	b3	b2	b1	Column	0	1	2	3	4	5	6	7
Bits	b4	b3	b2	b1	Row	0	1	2	3	4	5	6	7	8	9
	0	0	0	0	0		NUL	DLE	SP	0	@	P	^	p	
	0	0	0	1	1		SOH	DC1	!	!	A	O	a	q	
	0	0	1	0	2		STX	DC2	"	2	B	R	b	r	
	0	0	1	1	3		ETX	DC3	#	3	C	S	c	s	
	0	1	0	0	4		EQT	DC4	\$	4	D	T	d	t	
	0	1	0	1	5		END	NAK	%	5	E	U	e	u	
	0	1	1	0	6		ACK	SYN	&	6	F	V	f	v	
	0	1	1	1	7		BEL	ETB	'	7	G	W	g	w	
	1	0	0	0	8		BS	CAN	(	8	H	X	h	x	
	1	0	0	1	9		HT	EM	)	9	I	Y	i	y	
	1	0	1	0	10		LF	SUB	*	:	J	Z	j	z	
	1	0	1	1	11		VT	ESC	+	;	K	{	k	{	
	1	1	0	0	12		FF	FS	.	<	L		l		
	1	1	0	1	13		CR	GS*	-	=	M	]	m	~	
	1	1	1	0	14		SO	RS*	.	>	N	^	n	~	
	1	1	1	1	15		SI	US	/	?	O	_	o	DEL	

Generation of these codes from keyboard is as follows:

GS = Control ~  
RS = Control +

**Note**

Both column 4 ~ 5 (capital letter) and column 6 ~ 7 (small letter) in ASCII code table of all ESC code sequences have same function when in upper-case mode.

(Except DEL code)

**CONTROL CODES**

Signal	Name
ETX	End of Text
ACK	Acknowledge
BEL	Bell
BS	Backspace
HT	Horizontal Tab
LF	Line Feed
VT	Vertical Tab
FF	Form Feed
CR	Carriage Return
SO	Shift Out
SI	Shift In
DC1	Device Control 1
DC3	Device Control 3
ESC	Escape

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1st	ESC											
2nd	Absolute Horizontal Tab HT*			Absolute Vertical Tab VT*			Vertical Motion Index RS			Horizontal Motion Index US		
3rd	0	13	26	39	52	65	78	91	104	117		
	SOH	SO	ESC	(	)	5	B	O	\		v	
1	STX	SI	FS			6	C	P			w	
2	ETX	DLE	GS	*	*	7	D	Q	^	^	x	
3	EOT	DC1	RS	+	+	8	E	R	-	-	y	
4	ENQ	DC2	US	.	.	9	F	S	.	.	z	
5	ACK	DC3	SP	-	-	:	G	T	~	~	{	
6	BEL	DC4	!	-	-	;	H	U	^	^		
7	BS	NAK	"	/	/	<	I	V	c	c		
8	HT	SYN	#	0	0	=	J	W	d	d		
9	LF	ETB	\$	1	1	>	K	X	e	e		
10	VT	CAN	%	2	2	?	L	Y	f	f		
11	FF	EM	&	3	3	@	M	Z	g	g		
12	CR	SUB	'	4	4	A	N	[	h	h		

\*Desired Position = number from chart + 1  
 Ex: Absolute horizontal tab to print position 1 = ESC HT SOH

### CONTROL FUNCTIONS

ESC 1	Set Horizontal Tab Stop
ESC 2	Clear All Tab Stops
ESC 3	Graphics On
ESC 4	Graphics Off
ESC 5	Forward Print On
ESC 6	Backward Print On
ESC 8	Clear Individual Tab Stop
ESC 9	Set Left Margin
ESC 0	Set Right Margin
ESC A	Print in Red
ESC B	Print in Black
ESC D	Negative Half-Line Feed
ESC U	Half-Line Feed
ESC LF	Negative Line Feed