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2. STANDARD KEYBOARD ARRANGEMENTS

- 2.1 Figures 1 and 2 show the standard arrangements of the keys and the graphics assigned to them.
- 2.1.1 In Figures 1 and 2, the keys labelled with the letters of the alphabet are intended to produce lower case letters in the unshifted mode and upper case letters in the shifted mode. The other keys in these two Figures are intended to produce the lower graphic as shown in the key in the unshifted mode and the upper graphic as shown in the key in the shifted mode.
- 2.1.2 When one of the two characters normally assigned to a key is omitted, the remaining character may optionally be assigned in both modes.
- 2.1.3 The means by which keyboards utilizing these arrangements are to encode the characters is not prescribed.
- 2.1.4 No standard locations are defined herein for function keys that may be required on a keyboard device, other than 2 SHIFT KEYS, 1 SHIFT LOCK KEY and CONTROL FUNCTION KEY(s) which, when utilized, shall be outboard of the two SHIFT KEYS.
- 2.1.5 Inboard and outboard locations are provided for the Control characters of the United States of America Standard Code for Information Interchange Character Set. The "inboard" control locations shall be on the alphanumeric keys bit paired with the characters as shown in 2.1.6. The function of the CONTROL FUNCTION KEY(s) is to set the keyboard in the control mode while it is operated (depressed). It will cause those keys having control character assignments (2.1.6) to generate their respective United States of America Standard Code for Information Interchange Control Codes regardless of the state of the SHIFT or SHIFT LOCK KEY. The areas designated for "outboard" controls are located to the left and to the right of the alphanumeric area. The outboard control area is undefined in the exact placement of keys because it will vary with application. Depression of an outboard key with a single control character on it will generate its respective code regardless of the state of the SHIFT or SHIFT LOCK KEY. Outboard keys may have two control characters, one in unshifted mode, the other in shifted mode, providing the provisions of 2.2 are not violated.

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2.1.6 If an inboard control mode is provided, the following pairings will be observed:

NUL	@	DLE	P
SOH	A	DC1	Q
STX	B	DC2	R
ETX	C	DC3	S
EOT	D	DC4	T
ENQ	E	NAK	U
ACK	F	SYN	V
BEL	G	ETB	W
BS	H	CAN	X
HT	I	EM	Y
LF	J	SUB	Z
VT	K	ESC	[
FF	L	FS	\
CR	M	GS]
SO	N	RS	>
SI	O	US	_

- 2.1.7 The character DEL (Delete) when used on a key by itself shall be located in the outboard control area.
- 2.1.8 This standard is not intended to depreciate the assignment of a control both to a key prescribed herein and also to another key in a position not assigned in the standard arrangements.
- 2.1.9 A recommended location for a numeric cluster is adjacent to the most frequently used outboard controls to the right of the alphanumeric area.
- 2.2 The keyboard illustrated in Figure 1 and all its permissible derivatives, as herein prescribed, shall observe logical bit pairing rules. Specifically, the code relation between the upper shift character and the lower shift character of any given key shall consist only of inversion of bit 5 or inversion of bit 6.
- 2.2.1 In Figure 1, key DR8 produces underline in both the shifted and unshifted modes, but may optionally produce DEL (Delete) in the shifted mode and underline in the unshifted mode.
- 2.2.2 An option which provides both upper case and lower case commas and periods is obtained either by excluding the less than and greater than or reassigning these two characters to two alternate locations. Examples of such an assignment would be ER7, ER8, DR6, DR7, DR8, CR7 or elsewhere.

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2.2.3 A keyboard of fewer keys or characters than are encompassed by this standard is not in conflict with this standard providing the position assignment of the remaining characters conforms to the following rules:

- omit Key DR8 to obtain a 47 key keyboard,
or
- omit Keys DR8 and ER8 to obtain a 46 key keyboard,
or
- omit Keys DR8, ER8 and CR7 to obtain a 45 key keyboard,
or
- omit Keys DR8, ER8, CR7, and DR7 to obtain a 44 key keyboard.

Any pair of graphic characters allocated to the omitted keys may either be omitted or may be reallocated to any one of the following keys: ER7, ER8, DR6, DR7 or CR7. Any pair of characters replaced by a pair of characters from one of the omitted keys is lost. It cannot be reallocated to another key.

2.2.4 The specified locations for the 6 characters of the USA Standard Character Set for Optical Character Recognition (X3.17-1966) in Figure 1 that are not in USASCII are as follows:

<u>Key Position</u>	<u>Standard Character (USASCII)</u>	<u>Substitute Character (USASCOCR)</u>
EL5	!	1 5 2 7 {CE** GE**
*BR3	<	
ER6	=	
*BR4	>	
DR9	None	

* or as specified in Paragraph 2.2.2
 ** at this writing these characters will be included in a proposed revision

2.3 The keyboard illustrated in Figure 2 resembles as closely as possible, the electric typewriter arrangement as designated in Document X4.7-1966.

2.3.1 A keyboard of fewer keys or characters than are encompassed by this standard is not in conflict with this standard providing the position assignment of the remaining characters conforms to the following rules:

- omit ER8 to obtain a 46 key keyboard
- omit ER8, CR7 to obtain a 45 key keyboard
- omit ER8, CR7 and DR7 to obtain a 44 key keyboard

Any of the graphic characters allocated to the omitted keys may either be omitted or may be reallocated to any of the following keys: ER8, CR7, DR7 or DR6. Any character replaced by a character from one of the omitted keys is lost. It cannot be reallocated to another key.

Standard 44 key arrangements may have on key DR6 any two of the omitted characters from ER8, DR7, CR7, DR6, BR3 or BR4.

2.3.2 An option which provides both upper case and lower case commas and periods is obtained either by excluding the less than and greater than or reassigning these two characters to an alternate location(s). Examples of such an assignment would be ER7, ER8, DR6, DR7, DR8, CR7 or elsewhere.

2.3.3 The specified locations for the 6 characters of the USA Standard Character Set for Optical Character Recognition (X3.17-1966) in Figure 2 that are not in USASCI are as follows:

<u>Key Position</u>	<u>Standard Character (USASCI)</u>	<u>Substitute Character (USASCSOCR)</u>
EL5	!	⌈
EL4	@	⌋
EL3	#	⌌
ER1	~	⌍
DR6	^	CE**
DR6		GE**

** at this writing these characters will be included in a proposed revision

2.3.4 To provide complete compatibility with X4.7-1966 Preferred Keyboard Arrangement, an optional arrangement of Figure 2 provides these substitutions: ç for ! on ER1, 1/4 for ~ on DR6, and 1/2 for ^ on DR6.