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Systems

IBM 3270 Information Display System Custom Feature Description Dual Case Character Set RPQ 8K0366

Preface

This publication contains descriptive information, keyboard operating differences, and reference data for the Dual Case Character Set (RPQ 8K0366), which is an optional attachment to the 3270 Information Display System.

The Introduction defines the dual case character set. It is intended mainly for company executives, planners, and IBM marketing representatives. This material adds to the description of the 3270 system capabilities given in systems manual, *An Introduction to the 3270 Information Display System*, GA27-2739.

The Keyboard Operation section states the differences between mono and dual case operating procedures when using a keyboard attached to a 3277 or 3275 Display Station equipped with the Dual Case Character Set (RPQ 8K0366). This information supplements the keyboard operating instructions given in systems manual, *Operator's Guide for IBM 3270 Information Display Systems*, GA27-2742.

The Reference Data provided consists of coding charts used by programmers in conjunction with the systems manual, *IBM 3270 Information Display System Component Description*, GA27-2749.

When this publication is used, it is assumed that the reader has read the above-mentioned 3270 system manual(s), applicable to his needs.

First Edition (December, 1972)

Changes are periodically made to the information herein; before using this publication in connection with the operation of IBM systems, refer to the latest System/360 and System/370 SRL Newsletter, Order No. GN20-0360, for the editions that are applicable and current.

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INTRODUCTION

The Dual Case Character Set (RPQ 8K0366) provides primarily the ability to print or display the 26 lowercase alphabetic characters, and may be installed on the 3284 and 3286 printers, and on the 3275 and 3277 display stations that use American English, United Kingdom English, French, German, or Italian character generators. In addition, characters ç, è, é, à, and ù are added in the French character set, replacing mono-case characters ¢, !, #, @, and ". The ß is added to the German character set, and in the Italian character set ì, ò, è, ù, and a replace mono-case characters #, @, !, ", and ¢. See Figure 1 for examples of the Dual Case Character Set.

The dual case feature functions only with units that employ EBCDIC transmission code.

Configurators

Figures 2, 3, and 4 show the 3270 configurators with the Dual Case Character Set added.

Dual Case Keyboards

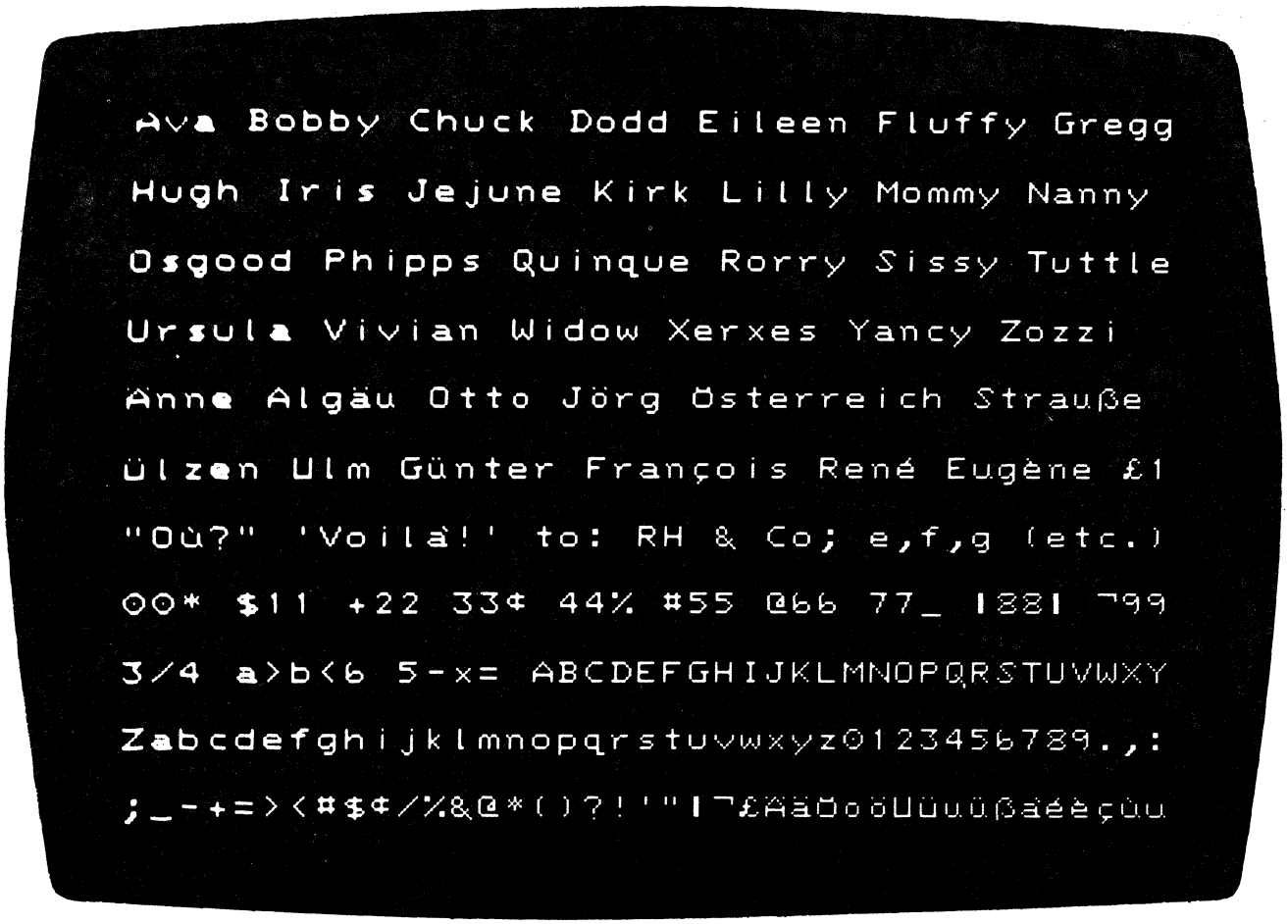
The dual case typewriter keyboards shown in Figures 5 through 7 are available for French, German, and Italian users. These keyboards contain unique characters that are not available on the associated mono-case keyboards. The keyboard for the United Kingdom is the same for both mono-case and dual case, and is illustrated in systems manual, *An Introduction to the 3270 Information Display System,* GA27-2739.

KEYBOARD OPERATION

The Dual Case Character Set can be generated from either typewriter or operator console type keyboards. When operating a keyboard attached to a display station equipped with dual case, the key functions explained in the *Operator's Guide for IBM 3270 Information Display Systems,* GA27-2742, are valid except for the SHIFT key operation. With dual case installed, pressing and holding the SHIFT key and then pressing a character key causes the selected characters to appear in upper case (capital letters) on the display screen. If a character key is pressed and the SHIFT key is not used, the selected letter appears on the screen in lower case.

REFERENCE DATA

The reference data in Tables 1 through 6 contain dual case modifications to existing information provided in systems manual, *IBM 3270 Information Display System Component Description*, GA27-2749.



Display Message

```
 b d f h b d     k m o q k *     s u w y s u     r U u h r U     b d f   b d f
XXCXEFXXI¢X(XX▮XJKXMXXPQXX$X);XX/SXUXXXYXX,X_)X0XX3X56XX9:X@XX" XXCXEFX XXCXEFX
abcdefghibcdefgqjklmnopqrkl*n;pyzstuvwxyzstuvwxhir9U5uoh9r9U5uo abcdefg abcdefg
ABCDEFGHI¢.((+▮&JKLMNOPQR!$*);¬-/STUVWXYZ ,%_)?0123456789:*@'=" ABCDEFG ABCDEFG
 b d f h b d     k m o q k *     s u w y s u     r U u h r U     b d f   b d f
XXCXEFXXI¢X(XX▮XJKXMXXPQXX$X);XX/SXUXXXYXX,X_)X0XX3X56XX9:X@XX" XXCXEFX XXCXEFX
```

Printer Message

Figure 1. Examples of the Dual Case Character Set

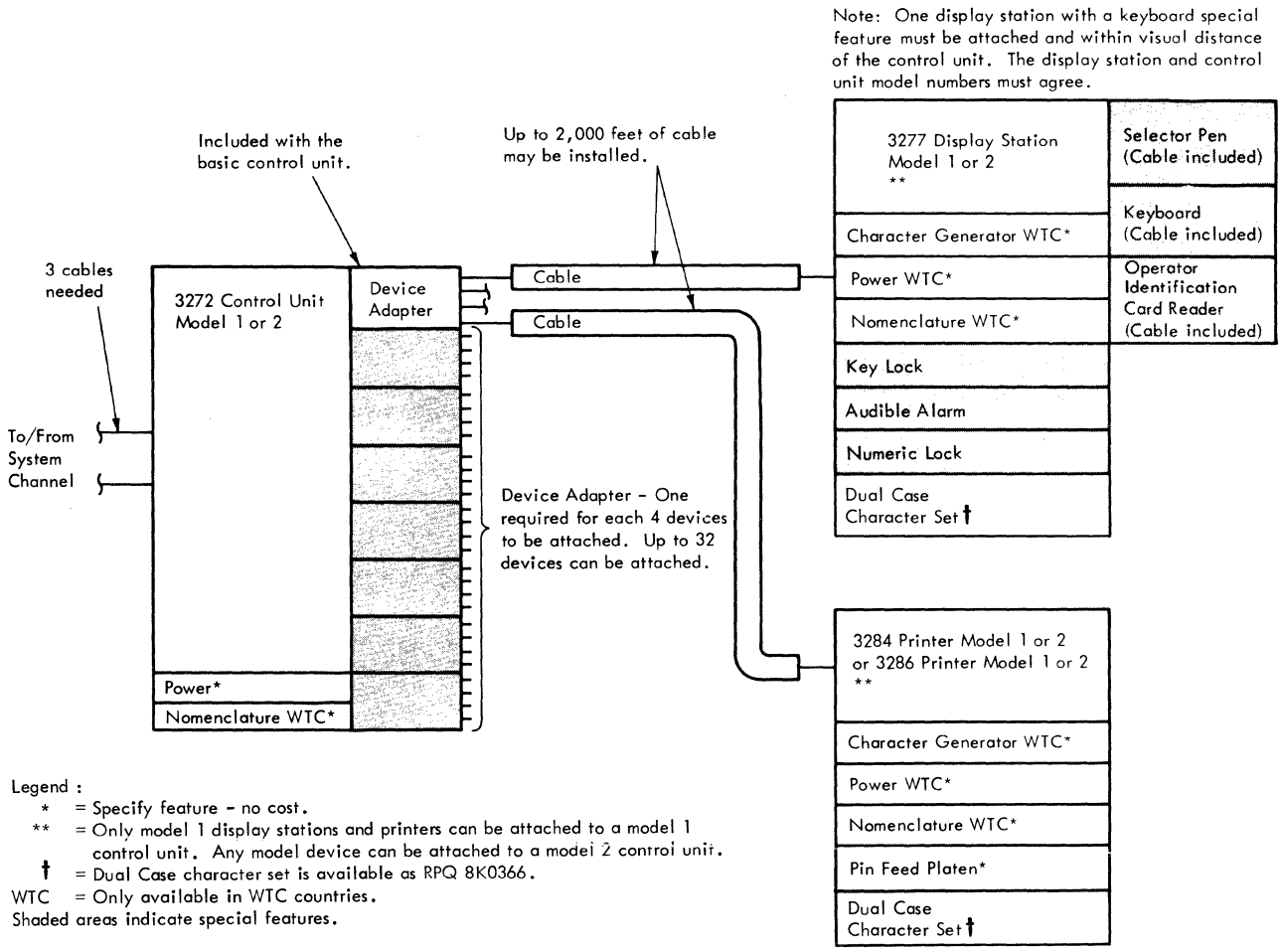
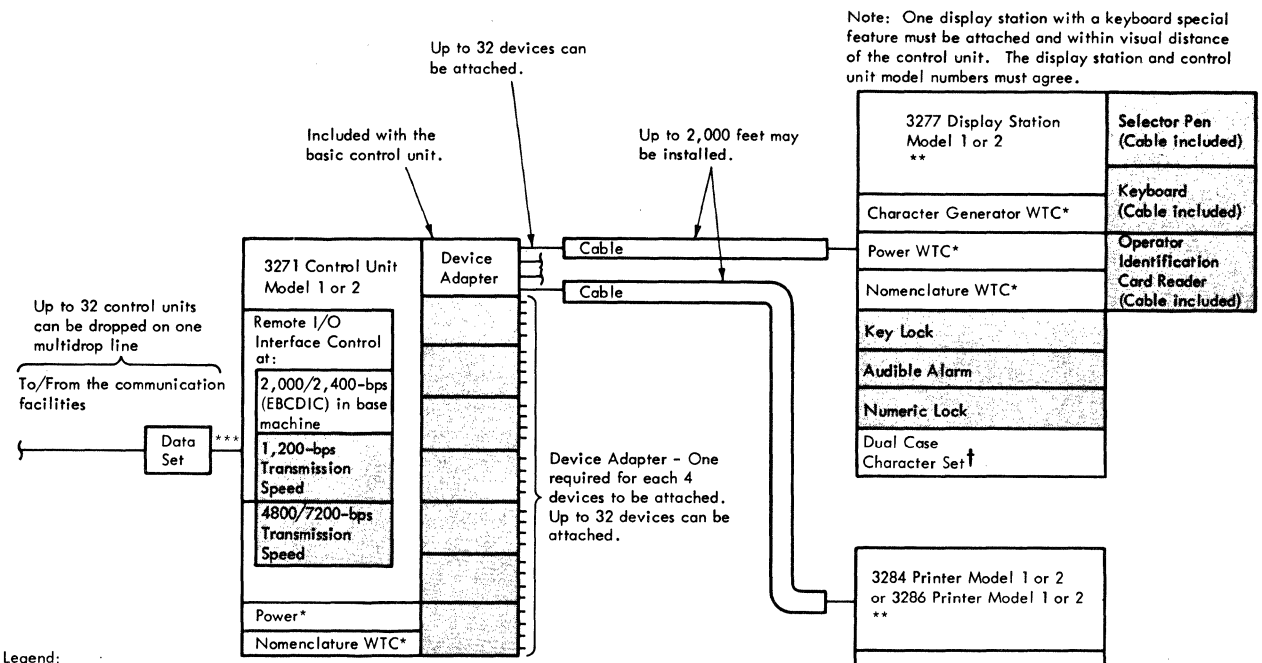
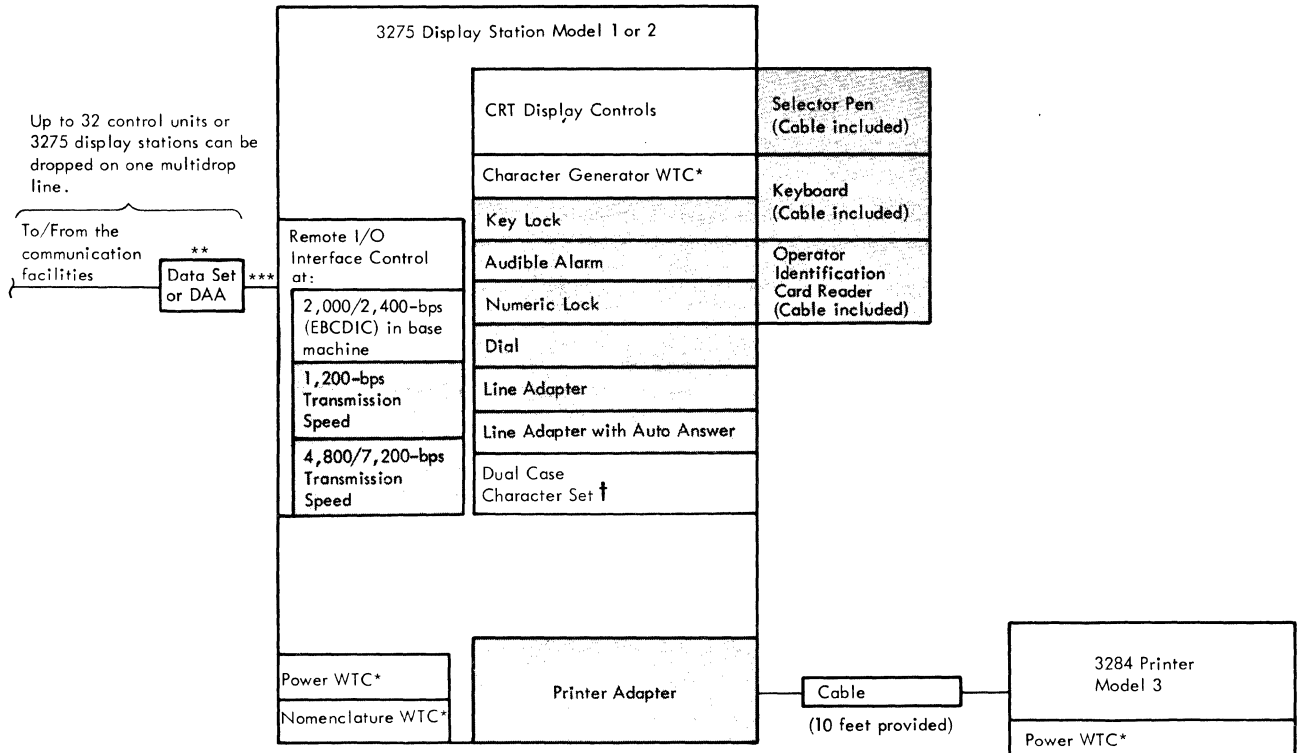


Figure 2. 3270 Display System – Local Configurator



Legend:
* = Specify feature-no cost.
** = Only model 1 display stations and printers can be attached to a model 1 control unit. Any model device can be attached to a model 2 control unit.
*** = Up to 40 feet of cable. To order this cable, refer to the 3270 cabling information in IBM System/360 Installation Manual - Physical Planning, Form GC22-6820, or in IBM System/370 Installation Manual - Physical Planning, Form GC22-7004.
† = Dual Case Character Set is available as RPQ 8K0366.
WTC = Only available in WTC countries.
Shaded areas indicate special features.

Figure 3. 3270 Display System – Remote Configurator



Legend:

* = Specify feature-no cost.

** = A data access arrangement is required when using the IBM 600/1200-bps Line Adapter to connect a 3275, equipped with the Dial feature, to a switched telephone network.

*** = Up to 40 feet of cable needed. To order this cable, refer to the 3270 cabling information in IBM System/360 Installation Manual - Physical Planning, Form GC22-6820, or in IBM System/370 Installation Manual - Physical Planning, Form GC22-7004.

A cable is needed for each of the following feature groups:

1. 3275 with external data sets
2. 3275 with the IBM 600/1200-bps Line Adapter.
3. 3275 using Dial and the IBM 600/1200-bps Line Adapter with Auto Answer.

} The 3275 operates via leased lines or with Dial feature installed, via switched lines.

† = Dual Case Character Set is available as RPQ 8K0366.

WTC = Only available in WTC countries.

Shaded areas indicate special features.

Figure 4. 3275 Display Station Configurator

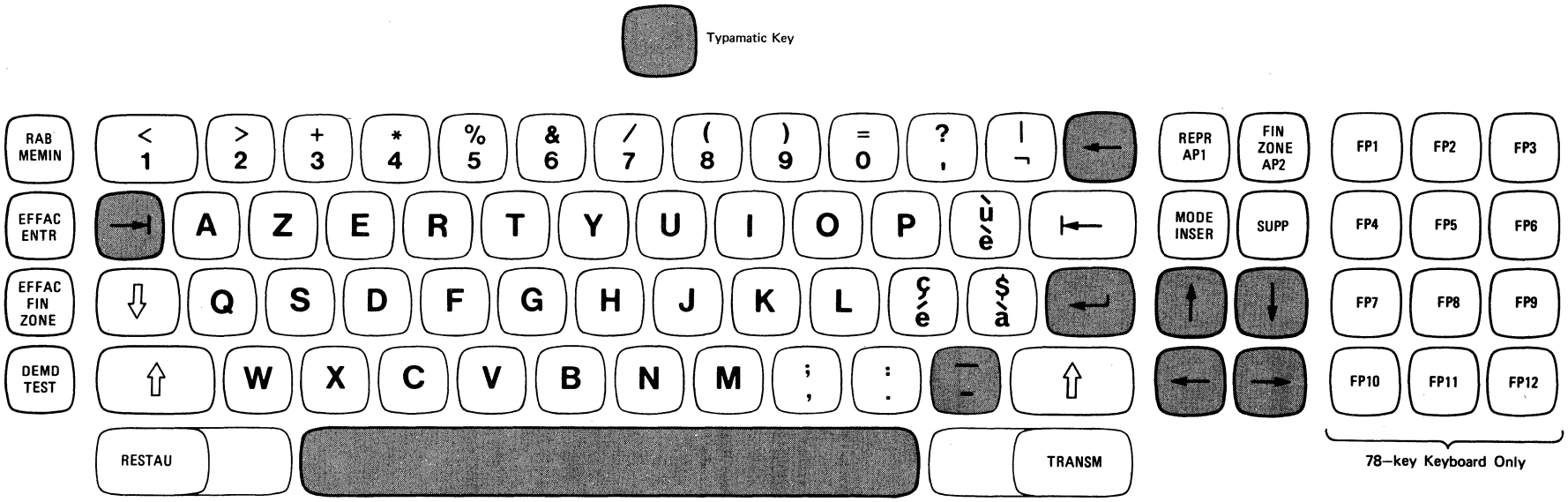


Figure 5. French Dual Case Typewriter Keyboard, 66 and 78 Keys

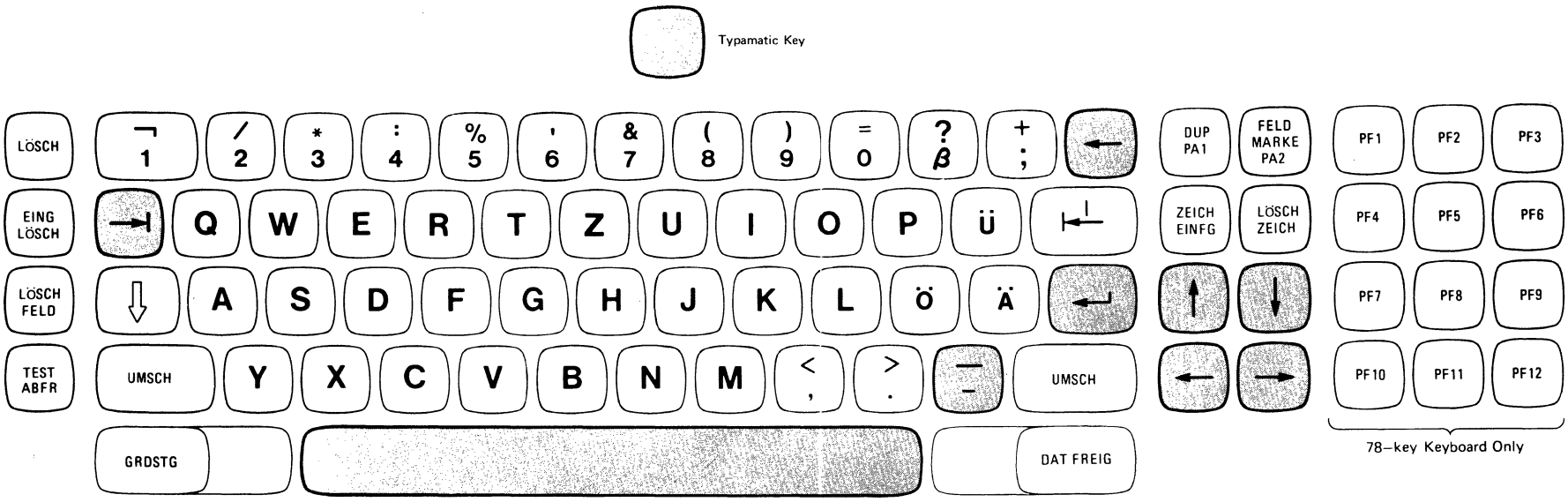


Figure 6. German Dual Case Typewriter Keyboard, 66 and 78 Keys

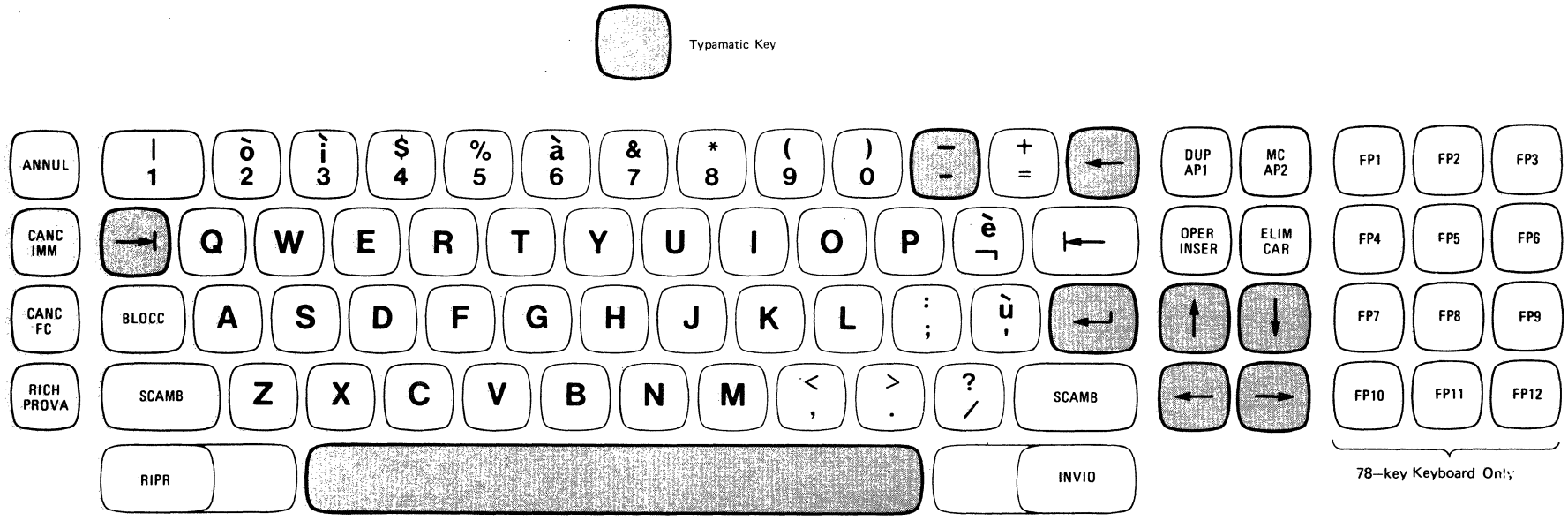


Figure 7. Italian Dual Case Typewriter Keyboard, 66 and 78 Keys

Table 1. United States I/O Interface Code – EBCDIC

Bits 4567	Hex 1	00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0	NUL	DLE			SP	&	-									0	
0001	1	SOH	SBA					/		a	j			A	J		1	
0010	2	STX	EUA		SYN					b	k	s		B	K	S	2	
0011	3	ETX	IC							c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5	PT	NL							e	n	v		E	N	V	5	
0110	6			ETB						f	o	w		F	O	W	6	
0111	7			ESC	EOT					g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9		EM							i	r	z		I	R	Z	9	
1010	A					¢	!	¦	:									
1011	B					.	$	,	#									
1100	C		DUP		RA	<	*	%	@									
1101	D		SF	ENQ	NAK	(	)	_	'									
1110	E		FM			+	;	>	=									
1111	F		ITB		SUB	|	¬	?	"									

Notes:

1. Character code assignments other than those shown within all outlined areas of this chart are undefined. If an undefined character code is programmed, the character that will be displayed is not specified. The character displayed by the 3277 or 3275 for a given undefined character code may be different for other devices. IBM reserves the right to change at any time the character displayed for an undefined character code.
2. Without the Dual Case Character Set (RPQ 8K0366), the 26 lowercase alphabetic characters (within the dotted outlined area) are converted to uppercase by the display station or printer and displayed or printed as uppercase characters.
3. NL, EM, DUP, and FM control characters are displayed or printed as 5, 9, *, and ; characters, respectively, except by the printer under format control, in which case NL and EM do not result in a character being printed.
4. Bits 0 and 1 are assigned for the following characters: attribute, write control (WCC), copy control (CCC), CU and device address, buffer address, sense, and status. These bits are assigned so that each character can be represented by a graphic character within the solid outlined areas of the chart. See Table 6.

Table 2. French I/O Interface Code

Bits 4567	Hex 1	00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0	NUL	DLE			SP	&	-									0	
0001	1	SOH	SBA					/		a	j			A	J		1	
0010	2	STX	EUA		SYN					b	k	s		B	K	S	2	
0011	3	ETX	IC							c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5	PT	NL							e	n	v		E	N	V	5	
0110	6			ETB						f	o	w		F	O	W	6	
0111	7			ESC	EOT					g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9		EM							i	r	z		I	R	Z	9	
1010	A					¢	!	¦	:									
1011	B					.	$	,	#									
1100	C		DUP		RA	<	*	%	@									
1101	D		SF	ENQ	NAK	(	)	_	'									
1110	E		FM			+	;	>	=									
1111	F		ITB		SUB	|	¬	?	"									

Notes:

1. Character code assignments other than those shown within all outlined portions of this chart are undefined. If an undefined character code is programmed, the character that will be displayed is not specified. The character displayed by the 3277 or 3275 for a given undefined character code may be different for other devices. IBM reserves the right to change at any time the character displayed for an undefined character code.
2. Without the Dual Case Character Set (RPQ 8K0366), the 26 lowercase alphabet characters (within the dotted outline area) are converted to uppercase by the display station or printer and are displayed or printed as uppercase characters.
3. Unique characters displayed with the mono-case or dual case character generators installed are as follows:

EBCDIC Hex	Mono-Case*	Dual Case	Domestic (Ref only)
5B	$	$	$
7B	#	é	#
7C	@	à	@
5A	!	è	!
7F	"	ù	"
4A	¢	ç	¢

*Illustrated in code chart above.

4. NL, EM, DUP, and FM control characters are displayed or printed as 5, 9, *, and ; characters, respectively, except by the printer under format control, in which case NL and EM do not result in a character being printed.
5. Bits 0 and 1 are assigned for the following characters: attribute, write control (WCC), copy control (CCC), CU and device address, buffer address, sense, and status. These bits are assigned so that each character can be represented by a graphic character within the solid outlined portions of the chart. See Table 6.

Table 3. German I/O Interface Code

Bits 4567	Hex 1	00				01				10				11			
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL	DLE			SP	&	-									0
0001	1	SOH	SBA					/		a	j			A	J		1
0010	2	STX	EUA		SYN					b	k	s		B	K	S	2
0011	3	ETX	IC							c	l	t		C	L	T	3
0100	4									d	m	u		D	M	U	4
0101	5	PT	NL							e	n	v		E	N	V	5
0110	6			ETB						f	o	w		F	O	W	6
0111	7			ESC	EOT					g	p	x		G	P	X	7
1000	8									h	q	y		H	Q	Y	8
1001	9		EM							i	r	z		I	R	Z	9
1010	A					ö	Ü		:								
1011	B					.	ü	,	Ä								
1100	C		DUP		RA	<	*	%	@								
1101	D		SF	ENQ	NAK	(	)	_	'								
1110	E		FM			+	;	>	=								
1111	F		ITB		SUB	|	¬	?	Ö							

Bits 0,1 — Bits 2,3 — Hex 0

Notes:

1. Character code assignments other than those shown within all outlined portions of this chart are undefined. If an undefined character code is programmed, the character that will be displayed is not specified. The character displayed by the 3277 or 3275 for a given undefined character code may be different for other devices. IBM reserves the right to change at any time that character displayed for an undefined character code.
2. Without the Dual Case Character Set (RPQ 8K0366), the 26 lowercase alphabet characters (within the dotted outlined area) are converted to uppercase by the display station or printer and are displayed or printed as uppercase characters.
3. Unique characters displayed with the mono-case or dual case character generator installed are as follows:

EBCDIC Hex	Mono-Case*	Dual Case	Domestic (Ref only)
5B	Ü	Ü	$
7B	Ä	Ä	#
7C	Ö	Ö	@
5A	Ü	ü	!
7F	Ä	ä	"
4A	Ö	ö	ç
6A	(Blank)	ß	(Blank)

*Illustrated in code chart above.

4. NL, EM, DUP, and FM control characters are displayed or printed as 5, 9, *, and ; characters, respectively, except by the printer under format control, in which case NL and EM do not result in a character being printed.
5. Bits 0 and 1 are assigned for the following characters: attribute, write control (WCC), copy control (CCC), CU and device address, buffer address, sense, and status. These bits are assigned so that each character can be represented by a graphic character within the solid outlined portions of the chart. See Table 6.

Table 4. Italian I/O Interface Code

Bits 4567	Hex 1	00				01				10				11			
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL	DLE			SP	&	-									0
0001	1	SOH	SBA					/		a	j			A	J		1
0010	2	STX	EUA		SYN					b	k	s		B	K	S	2
0011	3	ETX	IC							c	l	t		C	L	T	3
0100	4									d	m	u		D	M	U	4
0101	5	PT	NL							e	n	v		E	N	V	5
0110	6			ETB						f	o	w		F	O	W	6
0111	7			ESC	EOT					g	p	x		G	P	X	7
1000	8									h	q	y		H	Q	Y	8
1001	9		EM							i	r	z		I	R	Z	9
1010	A					¢	!		:								
1011	B					.	$	,	#								
1100	C		DUP		RA	<	*	%	@								
1101	D		SF	ENQ	NAK	(	)	_	'								
1110	E		FM			+	;	>	=								
1111	F		ITB		SUB	|	¬	?	"								

Bits 0,1 ← 00 01 10 11
Bits 2,3 ← 00 01 10 11
Hex 0 ← 0 1 2 3 4 5 6 7 8 9 A B C D E F

Notes:

1. Character code assignments other than those shown within all outlined portions of this chart are undefined. If an undefined character code is programmed, the character that will be displayed is not specified. The character displayed by the 3277 or 3275 for a given undefined character code may be different for other devices. IBM reserves the right to change at any time the character displayed for an undefined character code.
2. Without the Dual Case Character Set (RPQ 8K0366), the 26 lowercase alphabet characters (within the dotted outlined areas) are converted to uppercase by the display station or printer and are displayed or printed as uppercase characters.
3. Unique characters displayed with the mono-case or dual case character generator installed are as follows:

EBCDIC Hex	Mono-Case*	Dual Case	Domestic (Ref only)
5B	$	$	$
7B	#	#	#
7C	@	@	@
5A	!	!	!
7F	"	"	"
4A	¢	¢	¢

*Illustrated in code chart above.

4. NL, EM, DUP, and FM control characters are displayed or printed as 5, 9, *, and ; characters, respectively, except by the printer under format control, in which case NL and EM do not result in a character being printed.
5. Bits 0 and 1 are assigned for the following characters: attribute, write control (WCC), copy control (CCC), CU and device address, buffer address, sense, and status. These bits are assigned so that each character can be represented by a graphic character within the solid outlined portions of the chart. See Table 6.

Table 5. United Kingdom I/O Interface Code

Bits 4567	Hex 1	00				01				10				11				Bits 0,1
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	2,3
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0	NUL	DLE			SP	&	-									0	
0001	1	SOH	SBA					/		a	j			A	J		1	
0010	2	STX	EUA		SYN					b	k	s		B	K	S	2	
0011	3	ETX	IC							c	l	t		C	L	T	3	
0100	4									d	m	u		D	M	U	4	
0101	5	PT	NL							e	n	v		E	N	V	5	
0110	6			ETB						f	o	w		F	O	W	6	
0111	7			ESC	EOT					g	p	x		G	P	X	7	
1000	8									h	q	y		H	Q	Y	8	
1001	9		EM							i	r	z		I	R	Z	9	
1010	A					$	!	¦	:									
1011	B					.	£	,	#									
1100	C		DUP		RA	<	*	%	@									
1101	D		SF	ENQ	NAK	(	)	_	'									
1110	E		FM			+	;	>	=									
1111	F		ITB		SUB	¦	¬	?	"									

Notes:

1. Character code assignments other than those shown within all outlined portions of this chart are undefined. If an undefined character code is programmed, the character that will be displayed is not specified. The character displayed by the 3277 or 3275 for a given undefined character code may be different for other devices. IBM reserves the right to change at any time the character displayed for an undefined character code.
2. Without the Dual Case Character Set (RPQ 8K0366), the 26 lowercase alphabetic characters (within the dotted outlined area) are converted to uppercase by the display station or printer and displayed or printed as uppercase characters.
3. NL, EM, DUP, and FM control characters are displayed or printed as 5, 9, *, and ; characters, respectively, except by the printer under format control, in which case NL and EM do not result in a character being printed.
4. Bits 0 and 1 are assigned for the following characters: attribute, write control (WCC), copy control (CCC), CU and device address, buffer address, sense, and status. These bits are assigned so that each character can be represented by a graphic character within the solid outlined areas of the chart. See Table 6.

Table 6. Assignments for Internal 7-Bit Structured Data

Bits 123	Bits 4567	Graphic	EBCDIC
000	0001	a	81
000	0010	b	82
000	0011	c	83
000	0100	d	84
000	0101	e	85
000	0110	f	86
000	0111	g	87
000	1000	h	88
000	1001	i	89
001	0001	j	91
001	0010	k	92
001	0011	l	93
001	0100	m	94
001	0101	n	95
001	0110	o	96
001	0111	p	97
001	1000	q	98
001	1001	r	99
010	0010	s	A2
010	0011	t	A3
010	0100	u	A4
010	0101	v	A5
010	0110	w	A6
010	0111	x	A7
010	1000	y	A8
010	1001	z	A9
100	0000	SP	40
100	0001	A	C1
100	0010	B	C2
100	0011	C	C3
100	0100	D	C4
100	0101	E	C5
100	0110	F	C6
100	0111	G	C7
100	1000	H	C8
100	1001	I	C9
100	1010	¢, ç, à, ö	4A
100	1011	.	4B
100	1100	<	4C
100	1101	(	4D
100	1110	+	4E
100	1111	|	4F
101	0000	&	50
101	0001	J	D1
101	0010	K	D2
101	0011	L	D3
101	0100	M	D4
101	0101	N	D5
101	0110	O	D6
101	0111	P	D7
101	1000	Q	D8
101	1001	R	D9
101	1010	!, ü, è	5A
101	1011	$	5B
101	1100	*	5C
101	1101	)	5D
101	1110	;	5E
101	1111	¬	5F
110	0000	-	60
110	0001	/	61
110	0010	S	E2
110	0011	T	E3
110	0100	U	E4
110	0101	V	E5
110	0110	W	E6
110	0111	X	E7
110	1000	Y	E8
110	1001	Z	E9
110	1010	¦, β	6A
110	1011	,	6B
110	1100	%	6C
110	1101	_	6D
110	1110	>	6E
110	1111	?	6F
111	0000	0	F0
111	0001	'	F1
111	0010	2	F2
111	0011	3	F3
111	0100	4	F4
111	0101	5	F5
111	0110	6	F6
111	0111	7	F7
111	1000	8	F8
111	1001	9	F9
111	1010	:	7A
111	1011	#, Ä, é, ì	7B
111	1100	@, Ö, à, ò	7C
111	1101	'	7D
111	1110	=	7E
111	1111	", ù	7F

Note: When the 3271, 3272, or 3275 is equipped with the Dual Case Character Set (RPQ 8K0366), graphic characters are handled internally as 7-bit structured data, designated as bits 1 through 7 in the table. When these units receive attribute, AID, write control (WCC), or copy control (CCC) characters or CU and device addresses or buffer addresses, only the lower-order six bits (bits 2 through 7) are decoded. All characters transmitted to the program are assigned the appropriate EBCDIC code by the 3271, 3272, or 3275. Before transmission, bit 0 is assigned when sending graphic characters. Bits 0 and 1 are assigned when transmitting attribute, AID, write control (WCC), or copy control (CCC) characters; CU and device addresses or buffer addresses; or status and sense.

To use this table to determine the hex code sent for nongraphic characters:

1. Determine the value of bits 2 through 7.
2. Assign a value of 1 to bit 1.
3. Select this bit configuration in the table.
4. Find the hex code transmitted in the EBCDIC column to the right of the bit configuration.

IBM 3270 Information Display System Custom Feature Description
Dual Case Character Set RPQ 8K0366

READER'S COMMENT FORM

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