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About diacritics

Some of the patron and material records in your Spectrum database may contain non-standard characters, called diacritics. These are especially common in non-English words.

Libraries that primarily use the English language usually configure their computers for the English language. This makes sense, but it also means that typing and displaying non-English characters is not as simple as it is for English characters. For example, the ñ character is not on a standard English language keyboard.

Spectrum CIRC/CAT supports diacritics in most areas of the program. Spectrum attempts to convert data from one code page to another with minimal loss of data, since not all code pages have all the diacritic marks that other code pages have.

Previous versions of Spectrum used a program called Code Page Conversion to convert text files from one character set to another and convert vendor-specific encoded diacritics. This program is no longer necessary because Spectrum automatically converts files when you import.

What is a diacritical mark?

Diacritical marks, or diacritics, are small marks placed over, under or next to a letter to indicate pronunciation, accent, and so on. An example is a dieresis: two dots placed over the second of two consecutive vowels to indicate that the second vowel should be pronounced in a separate syllable; for example, *naïve*. A tilde (~) is used over an *n* in Spanish when it should be pronounced as *ny*, and over certain vowels in Portuguese to indicate that they are nasal. Different character sets, or code pages, display different diacritic marks for the characters in the extended ASCII range (values 0x80 through 0xFF).

Accent characters can be either spacing or nonspacing. When printed, spacing characters take up the space of one character in addition to the character they modify (for example, `a). Nonspacing characters fit in the same space as another character when printed (for example, à). The term "modifying" also means it modifies a character rather than taking its own space.

In this documentation the term diacritic is also used loosely to mean any of the characters in the extended ASCII range.

How to enter diacritical marks

Example scenario: You want to enter a small letter n with tilde (ñ). Using Windows, this character has a decimal value of 241.

To enter diacritical marks (Windows)

- 1 Look up the decimal value of the character you want to enter. See the *Diacritics* appendix chapter in the *Spectrum CIRC/CAT Reference Manual* for tables of character sets.
- 2 Place your cursor in the location where you want to insert the diacritic.
- 3 Press the **Alt** key on your keyboard and type 0 (zero) followed by the decimal value on your numeric keypad. In this case, type *0241*.
- 4 Release the **Alt** key. The ñ character is inserted.

Example scenario: You want to enter the symbol for a registered trademark (®).

To enter diacritical marks (Macintosh)

- 1 Look up the keystrokes required for the character you want to enter. See the *Diacritics* appendix chapter in the *Spectrum CIRC/CAT Reference Manual* for tables of character sets.
- 2 Place your cursor in the location where you want to insert the diacritic.
- 3 Enter the combination of keystrokes required to enter the character. In this case, press **Option + R**. The ® character is inserted.

Note: On a Macintosh, you can also copy characters from the Key Caps control panel. See the documentation that came with your computer for more information.

What is a character set/code page?

The terms *character set* and *code page* both refer to the specific set of characters your operating system uses when you display, print, and work with text. Because languages use different combinations of characters, MARC records from a non-U.S. vendor *may* use a different character set than your library is set up for.

Each character set consists of 256 different characters (letters, numbers, and symbols). Each character in the set is assigned its own number. Characters assigned the lower numbers (up to 128) are often identical (for example, an "a" in an English character set uses the same number as an "a" in the French character set). However, the higher numbered characters (from 129 to 256) may be more specific to the national language, and so they may differ slightly.

If you import material data with a different character set using the wrong code page, some high-level characters in MARC data may appear different than you intended. It may also affect catalog searches.

For more on character sets, including tables of different sets and how to determine the set your computer uses, see the manual that came with your computer's operating system. Microsoft also has several books and manuals that cover issues related to country- or language-specific settings. The *Diacritics* appendix in the *Spectrum CIRC/CAT Reference Manual* includes character sets for Windows, Macintosh, and cross-platform.

Code pages supported by Spectrum CIRC/CAT

Spectrum supports the following code pages.

Name	Description
ISO-8859-1	The ISO 8859-1 (Latin-1) character set. This is the set that the International Standards Organization has established for most languages that use the Latin alphabet, such as West European languages. It is used by the Windows operating system.
CP1252	The CP1252 character set is also used by Windows and is a superset of ISO-8859-1.

Name	Description
Macintosh Standard Roman	The Macintosh character set. If the data file comes from Winnebago CIRC/CAT for Mac OS, you should select this as your input format.
MARC21 Basic Latin (ASCII) and Extended Latin (ANSEL)	A code page for bibliographic data. Spectrum supports this code page conversion only during import.
DOS 437	The DOS 437 code page (U.S.). This set includes characters for English and most other European languages. Spectrum supports this code page conversion only during import.
DOS 850	The DOS 850 code page (Multilingual). This set includes characters for most of the languages that use the Latin alphabet. Spectrum supports this code page conversion only during import.

For exceptions to diacritic support in various areas of the Spectrum program, see "Diacritic support in Spectrum".

For information about how Windows and Macintosh handle code pages, see "Windows vs. Macintosh code pages in Spectrum".

Windows vs. Macintosh code pages in Spectrum

On the Windows platform, Spectrum supports the entire ISO-8859-1 character set. If you use a Windows computer to enter any of those characters, and save them in a record, you can display that record with the correct diacritic marks *on a Windows computer*. Most of the CP1252 code page is also supported; the only exceptions are that the Euro sign is converted to a general currency sign and the "small tilde" is converted to an ASCII tilde.

On the Macintosh platform, the entire Macintosh Standard Roman character set is supported, meaning you can enter and save any character and it displays correctly *on a Macintosh computer*.

Because not all characters in the ISO-8859-1 character set are in the Macintosh Standard Roman character set, and vice versa, not all characters can be displayed across platforms. However, there are many commonly used accented characters that do display correctly on both platforms.

With a few exceptions, you should be able to enter diacritics throughout Spectrum CIRC/CAT. The following parts of the program do not accept diacritics: material numbers, location codes, and custom index names.

Diacritic support in Spectrum

The following table lists exceptions and limitations to using diacritics in different areas of Spectrum.

Spectrum area	Description
Database Update (Installation)	<p>During installation, the Database Update program runs through existing data and lets you choose whether the diacritics are in Macintosh or Windows code page. If you don't know or have a mixture of data, you can choose to use the auto-detect feature. Then the program converts it to the internal code page that Spectrum uses. The auto-detect program determines the code page on a record-by-record basis.</p> <p>The Database Update program does not convert to the local code page first, as Material Import does. So data in the MARC21 code page that would normally be converted to Macintosh or Windows during import remains in the MARC21 code page even though it may not show up well in Spectrum. Only material and patron data are converted during the database update.</p>
Patron Import	<p>Patron Import uses automatic code page detection for all the files it imports. Spectrum attempts to identify which character set was used when the import file was created, and stores the data appropriately in the database. The process should interpret most if not all of the diacritic marks correctly. Patron Import looks for all the Spectrum-supported character sets except MARC21, which is for bibliographic data.</p>
Material Import	<p>When you import materials, you can choose which code page to use for each import file, or you can choose to use the auto-detect feature. See "Diacritic support in Patron Import and Material Import" for more information.</p>
Patron Edit and Material Edit	<p>When you edit material or patron records on a Windows computer, you can use any of the ISO-8859-1 characters and most of the CP1252 characters, which display correctly on Windows computers. However, if you use any characters that are not available in Macintosh Standard Roman, they do not display</p>

Spectrum area	Description
	<p>correctly on Macintosh.</p> <p>Likewise, any Macintosh Standard Roman character that you enter on a Macintosh displays correctly on Macintosh but may not on Windows.</p> <p>If you want cross-platform support for diacritics, you should use only characters that are common to the CP1252 and Macintosh Standard Roman character sets.</p>
User-defined fields	<p>Patron and material user-defined fields retain accented characters and they sort incorrectly when present; however, they are grouped together in the index.</p>
Material Export and Patron Export	<p>Material and patron records are exported to the code page of the platform running the program. In other words, if you use a Macintosh, the data exports using the Macintosh Standard Roman code page. If you export using Windows, data exports using the CP1252 code page.</p>
Catalog	<p>For accented characters, patrons can enter search terms with or without diacritical marks. The program finds matching terms whether or not the accents are present. Other extended ASCII characters and symbols such as a summation sign or a cent sign, must be entered in order to be found.</p> <p>The Materials Found window displays titles, authors, and call numbers without accented characters. Removing the accents enables a more correct sorting of the search results. The Details window shows the data with accents.</p>
Catalog—Z39.50 Client	<p>Z39.50 searches may or may not accept and use diacritics depending on the site being searched. Spectrum passes the diacritics to the site but it's up to each site to use them correctly. When a Z39.50 search returns data to Spectrum, Spectrum auto-detects the code page that the data is in and converts it to show correctly on Windows or Macintosh. Diacritic accent marks are removed from the title and author displayed in the Materials</p>

Spectrum area	Description
	Found window so they sort better.
Web Catalog	Web Catalog will not display Macintosh-only characters above the value 127, because the data is being sent to a Windows-based web server. The Spectrum Web Catalog server runs on the Windows platform, so it will not deliver Macintosh-only diacritics to a browser even if the browser is running on a Macintosh.
Circulation—Patron Lookup	Patron names are stored twice in the database, once without diacritics so they sort correctly, and once with diacritics so they display correctly. Patron Lookup sorts and displays patron names correctly. See "Indexing diacritics" later in this chapter to understand how diacritics are sorted.
SLIP Setup	The Citizen SLIP printer does not print diacritics correctly. The Star SLIP printer prints diacritics correctly in Windows but not on a Macintosh.
SLIP Printing	In Windows, Spectrum sends CP1252 characters to the SLIP driver. On a Macintosh, Spectrum sends Macintosh Standard Roman characters to the SLIP printer driver. However, the SLIP driver for Macintosh doesn't print the Macintosh Standard Roman character set; it prints its own character set.
Global Subject Edit	Global Subject Edit interprets two subjects that are the same except for an accent mark over a character as being two different versions of the same subject. You can edit both versions to have the same accent mark or no accent mark.
Reports	Most reports display characters without accent marks. This is because the data for a report frequently comes from one of the files that is derived from the MARC file. These files are used for indexing and therefore have no accented characters. Whether the report indexes correctly with diacritics depends on which index is used. Some indexes have accents removed from

Spectrum area	Description
	letters, others do not. You should be aware of this when setting ranges for reports. See "Fields with removed accent characters" for a list of fields that have accent marks removed from characters.
Auto MARC Merge	Auto MARC Merge converts records to the local code page before comparing them. Different characters in the same position in different records may be converted to vertical bars and cause the records to match incorrectly, but the probability of this occurring is remote.
Batch Processing	<p>When you select records to batch process, whether or not the field has accents removed makes a difference in which records get processed. Entering accent marks as selection criteria counts only for fields that have accent marks in the index; to select records that have accents in the index, you must enter a diacritical mark. See "Fields with removed accent characters" for a list of fields that have accent marks removed from characters.</p> <p>The patron name is stored twice, once with and once without diacritics. When selecting a range of patron names to process, accent marks are ignored. Also, when you add conditions for batch processing records, accent marks in the patron name are ignored.</p> <p>When replacing data, if the new data has accent marks, those accent marks are stored with the fields that accept them.</p>

Diacritic support in Patron Import and Material Import

For both material and patron records, the import process first converts the incoming data from the incoming code page to the code page of the platform on which the program is running. So if you know the data is in a Windows code page, it's best to import it on a Windows computer. If it's Macintosh data coming in, it's best to import it on a Macintosh computer. Otherwise, the characters that are not supported on both platforms are converted to a vertical bar (|). If the incoming data is in the MARC21 code page, you should import it in Windows since more characters are retained than on a Macintosh.

Any character in the DOS 850, DOS 437, or MARC21 code pages that can be converted to the code page of the platform running the import is converted; otherwise, it is replaced

with a vertical bar. While the MARC21 standard allows multiple nonspacing diacritical marks to precede a spacing character, Spectrum uses only the single diacritical mark just before the spacing character; others are converted to a vertical bar. Escape sequences to change code pages in MARC21 are ignored by Spectrum. *Note:* Conversion during import is the only support offered for these three code pages.

When matching records by bibliographic information, the program takes an incoming record and converts it to the code page of the platform running the program (the local code page). When records are pulled from the database for matching they are also converted to the local code page. So the matching occurs with both records in the same code page.

A similar process takes place when matching patron records by name.

The Moving to Spectrum program auto-detects code pages in the same way that Material Import and Patron Import do.

Indexing diacritics

Some characters can have accents removed, such as the tilde from the ñ. The accents that can be removed are removed in Spectrum so they sort with the same non-accented character. Spectrum cannot sort alphabetic characters that have accent marks correctly because different languages sort them differently. The accents are removed from those characters before saving data to certain material files. However, the MARC record still retains the accent marks.

Technically, a character with an accent has a specific sorting order in relation to the same character without the accent. However, Spectrum sorts an accented "n" (ñ) with the rest of the "n" characters.

Diacritic characters that are not accented characters are usually left to sort high, meaning that they are displayed after the "traditional" characters in the alphabet.

Spectrum sorts ligatures as though they were two separate characters. A sharp s ligature is sorted as "ss".

For a list of fields that have accents removed, see "Fields with removed accent characters".

For guidelines on using diacritics in indexed fields, see "Diacritic guidelines for indexed fields".

Fields with removed accent characters

Diacritic accent marks are removed from certain fields so they sort accurately. The Spectrum fields with accent characters removed are:

- titles
- authors
- subjects—stored both with and without diacritics. The version with diacritics is used only for Global Subject Edit.
- publisher
- ISBN
- LCCN
- call number
- key words
- call number patterns
- call number group (Call Number Statistics report)
- group name (Visual Search)
- loaded group name (Visual Search)
- patron name—stored twice in the patron file, once with accents and once without, so that you can both display and sort the name correctly. The other patron fields store diacritics but do not sort them correctly, however they group correctly on reports.
- cross-reference words

Diacritic guidelines for indexed fields

If Spectrum runs across a diacritic character that can't be displayed on the computer being used (Windows or Macintosh), a vertical bar is displayed instead. If you do see a vertical bar, and it's in data that is indexed (such as titles, authors, subjects, and so on) you should consider editing the data to remove it. The vertical bar can interfere with an attempt to load the record using that index value.

If you use only Windows computers, you can use any of the ISO-8859-1 characters. Macintosh-only characters display as vertical bars and can be edited to a better value for Windows or deleted. Characters in the CP1252 character set may also display incorrectly depending on which font is used.

If you use only Macintosh computers, you can use any of the characters in the Macintosh Standard Roman character set. Windows-only characters display as vertical bars and can be edited to a better value for Macintosh or deleted.

If you use both Macintosh and Windows, the best way to ensure the diacritics are sorted correctly is to use only the characters that are common to both Windows and Macintosh platforms.

For example, the "thorn" character (an Icelandic character) is in the Windows code page but not the Macintosh. Let's say a title has the thorn in it. If you go into Material Edit on the Macintosh and try to load the record by the title and enter a vertical bar in place of the thorn, the record won't be found because a) you didn't enter the thorn and b) the vertical bar gets removed from the title you entered because it's assumed to replace a modifying accent mark rather than a character that's a letter by itself. So it's best just to keep the vertical bars out of the indexed fields.

Character sets

This section lists the character set for each of these operating systems:

- Cross-platform
- Windows-only
- Macintosh-only

In addition, the “Macintosh Standard Roman Text” section provides the keystrokes necessary to enter diacritics on a Macintosh.

Cross-platform characters

The cross-platform character table shows the extended ASCII characters that are common to Macintosh Standard Roman and CP1252 (Windows) code pages.

Some of the characters in the CP1252 character set may not show up correctly in Windows depending on which font is used. You may not want to consider them part of the cross-platform set. The characters have hex values 80 through 9F (decimal 128 through 159) in the Windows column.

In the following table, Mac refers to Macintosh Standard Roman and Windows refers to CP1252.

Glyph	Mac		Windows		Name
	Hex	Decimal	Hex	Decimal	
,	E2	226	82	130	single low-9 (comma) quote
<i>f</i>	C4	196	83	131	florin / script f / f with hook / function
„	E3	227	84	132	double low-9 (comma) quote
...	C9	201	85	133	horizontal ellipsis
†	A0	160	86	134	dagger
‡	E0	224	87	135	double dagger
^	F6	246	88	136	modifying circumflex
‰	E4	228	89	137	per mille sign
<	DC	220	8B	139	left single angle quote
Œ	CE	206	8C	140	capital OE ligature

Glyph	Mac		Windows		Name
	Hex	Decimal	Hex	Decimal	
‘	D4	212	91	145	left single quote
’	D5	213	92	146	right single quote
“	D2	210	93	147	left double quote
”	D3	211	94	148	right double quote
•	A5	165	95	149	bullet
–	D0	208	96	150	en dash
—	D1	209	97	151	em dash
™	AA	170	99	153	trade mark sign
›	DD	221	9B	155	single right angle quote
œ	CF	207	9C	156	small oe ligature
ÿ	D9	217	9F	159	capital Y, dieresis
	CA	202	A0	160	non-breaking space
¡	C1	193	A1	161	inverted exclamation
¢	A2	162	A2	162	cent
£	A3	163	A3	163	pound sterling
¤	DB	219	A4	164	currency sign / Euro
¥	B4	180	A5	165	Yen
§	A4	164	A7	167	section sign
¨	AC	172	A8	168	spacing dieresis (umlaut)
©	A9	169	A9	169	copyright
ª	BB	187	AA	170	feminine ordinal
«	C7	199	AB	171	left-pointing guillemet / angle quote
¬	C2	194	AC	172	logical not sign
®	A8	168	AE	174	registered trade mark
ˆ	F8	248	AF	175	spacing macron
°	A1	161	B0	176	degree sign
±	B1	177	B1	177	plus-or-minus sign
´	AB	171	B4	180	spacing acute
µ	B5	181	B5	181	micro sign

Glyph	Mac		Windows		Name
	Hex	Decimal	Hex	Decimal	
¶	A6	166	B6	182	paragraph sign / pilcrow
·	E1	225	B7	183	middle dot
¸	FC	252	B8	184	spacing cedilla
º	BC	188	BA	186	masculine ordinal
»	C8	200	BB	187	right-pointing guillemet / angle quote
¿	C0	192	BF	191	inverted question mark
À	CB	203	C0	192	capital A, grave
Á	E7	231	C1	193	capital A, acute
Â	E5	229	C2	194	capital A, circumflex
Ã	CC	204	C3	195	capital A, tilde
Ä	80	128	C4	196	capital A, dieresis
Å	81	129	C5	197	capital A, ring
Æ	AE	174	C6	198	capital AE ligature
Ç	82	130	C7	199	capital C, cedilla
È	E9	233	C8	200	capital E, grave
É	83	131	C9	201	capital E, acute
Ê	E6	230	CA	202	capital E, circumflex
Ë	E8	232	CB	203	capital E, dieresis
Ì	ED	237	CC	204	capital I, grave
Í	EA	234	CD	205	capital I, acute
Î	EB	235	CE	206	capital I, circumflex
Ï	EC	236	CF	207	capital I, dieresis
Ñ	84	132	D1	209	capital N, tilde
Ò	F1	241	D2	210	capital O, grave
Ó	EE	238	D3	211	capital O, acute
Ô	EF	239	D4	212	capital O, circumflex
Õ	CD	205	D5	213	capital O, tilde
Ö	85	133	D6	214	capital O, dieresis
Ø	AF	175	D8	216	capital O, slash
Ù	F4	244	D9	217	capital U, grave

Glyph	Mac		Windows		Name
	Hex	Decimal	Hex	Decimal	
Ú	F2	242	DA	218	capital U, acute
Û	F3	243	DB	219	capital U, circumflex
Ü	86	134	DC	220	capital U, dieresis
ß	A7	167	DF	223	small sharp s, German sz or ss ligature
à	88	136	E0	224	small a, grave
á	87	135	E1	225	small a, acute
â	89	137	E2	226	small a, circumflex
ã	8B	139	E3	227	small a, tilde
ä	8A	138	E4	228	small a, dieresis
å	8C	140	E5	229	small a, ring
æ	BE	190	E6	230	small ae ligature
ç	8D	141	E7	231	small c, cedilla
è	8F	143	E8	232	small e, grave
é	8E	142	E9	233	small e, acute
ê	90	144	EA	234	small e, circumflex
ë	91	145	EB	235	small e, dieresis
ì	93	147	EC	236	small i, grave
í	92	146	ED	237	small i, acute
î	94	148	EE	238	small i, circumflex
ï	95	149	EF	239	small i, dieresis
ñ	96	150	F1	241	small n, tilde
ò	98	152	F2	242	small o, grave
ó	97	151	F3	243	small o, acute
ô	99	153	F4	244	small o, circumflex
õ	9B	155	F5	245	small o, tilde
ö	9A	154	F6	246	small o, dieresis
÷	D6	214	F7	247	division sign
ø	BF	191	F8	248	small o, slash
ù	9D	157	F9	249	small u, grave
ú	9C	156	FA	250	small u, acute
û	9E	158	FB	251	small u, circumflex

	Mac		Windows		
Glyph	Hex	Decimal	Hex	Decimal	Name
ü	9F	159	FC	252	small u, dieresis
ÿ	D8	216	FF	255	small y, dieresis

Windows-only characters


The following tables show the characters that are used in Windows but not Mac. These characters can be lost when you edit data on a Macintosh.

ISO-8859-1 code page			
Glyph	Hex	Decimal	Description
‡	0xA6	166	Broken vertical bar
-	0xAD	173	Soft hyphen
²	0xB2	178	Superscript 2
³	0xB3	179	Superscript 3
¹	0xB9	185	Superscript 1
¼	0xBC	188	Fraction 1/4
½	0xBD	189	Fraction 1/2
¾	0xBE	190	Fraction 3/4
Ð	0xD0	208	Capital eth, Icelandic
×	0xD7	215	Multiply sign
Ý	0xDD	221	Capital Y, acute accent
Þ	0xDE	222	Capital thorn, Icelandic
ð	0xF0	240	Small eth, Icelandic
ý	0xFD	253	Small y, acute accent
þ	0xFE	254	Small thorn, Icelandic

CP1252			
Glyph	Hex	Decimal	Description
€	0x80	128	Euro sign
Š	0x8A	138	Capital S with caron
Ž	0x8E	142	Capital Z with caron
~	0x98	152	Small tilde
š	0x9A	154	Small s with caron
ž	0x9E	158	Small z with caron
	0x81	129	Unused
	0x8D	141	Unused
	0x8F	143	Unused
	0x90	144	Unused
	0x9D	157	Unused

Macintosh-only characters

The following table shows the characters that are used in the Macintosh Standard Roman code page but not Windows. These characters can be lost if you edit data in Windows.

Macintosh Standard Roman			
Glyph	Hex	Decimal	Description
≠	0xAD	173	Not equal to
∞	0xB0	176	Infinity
≤	0xB2	178	Less than or equal to
≥	0xB3	179	Greater than or equal to
∂	0xB6	182	Partial differential
Σ	0xB7	183	N-ary summation
Π	0xB8	184	N-ary product
π	0xB9	185	Greek small letter pi
∫	0xBA	186	Integral
Ω	0xBD	189	Ohm
√	0xC3	195	Square root
≈	0xC5	197	Almost equal to
Δ	0xC6	198	Delta
	0xD7	215	Lozenge
/	0xDA	218	Fraction slash
fi	0xDE	222	fi ligature
fl	0xDF	223	fl ligature
	0xF0	240	Apple logo
ı	0xF5	245	Dotless i
~	0xF7	247	Spacing tilde
˘	0xF9	249	Spacing breve
·	0xFA	250	Spacing dot above
◦	0xFB	251	Spacing ring above
”	0xFD	253	Spacing double acute
ć	0xFE	254	Spacing ogonek
ˇ	0xFF	255	Modifying hacek

Macintosh Standard Roman Text

The following table provide the keystrokes necessary to enter diacritic characters on a Macintosh. Only the upper 128 characters are included.

Apple changed the glyph for hex value DB from the general currency sign to the Euro sign as of System Software version 8.5. See Apple Tech Note 1140.

Dec	Hex	Description	Keystrokes
128	80	A with diaeresis	Option/U Shift/A
129	81	A with ring	Option/Shift/A
130	82	C with cedilla	Option/Shift/C
131	83	E with acute accent	Option/E Shift/E
132	84	N with tilde	Option/N Shift/N
133	85	O with diaeresis	Option/U Shift/O
134	86	U with diaeresis	Option/U Shift/U
135	87	a with acute accent	Option/E A
136	88	a with grave accent	Option/^ A
137	89	a with circumflex	Option/I A
138	8A	a with diaeresis	Option/U A
139	8B	a with tilde	Option/N A
140	8C	a with ring	Option/A
141	8D	c with cedilla	Option/C
142	8E	e with acute accent	Option/E E
143	8F	e with grave accent	Option/^ E
144	90	e with circumflex	Option/I E
145	91	e with diaeresis	Option/U E
146	92	i with acute accent	Option/E I
147	93	i with grave accent	Option/^ I
148	94	i with circumflex	Option/I I
149	95	i with diaeresis	Option/U I
150	96	n with tilde	Option/N N
151	97	o with acute accent	Option/E O
152	98	o with grave accent	Option/^ O
153	99	o with circumflex	Option/I O
154	9A	o with diaeresis	Option/U O
155	9B	o with tilde	Option/N O
156	9C	u with acute accent	Option/E U
157	9D	u with grave accent	Option/^ U
158	9E	u with circumflex	Option/I U
159	9F	u with diaeresis	Option/U U
160	A0	dagger	Option/T

Dec	Hex	Description	Keystrokes
161	A1	degree	Option/Shift/8
162	A2	cent	Option/4
163	A3	pound sterling	Option/3
164	A4	section	Option/6
165	A5	bullet	Option/8
166	A6	pilcrow (paragraph sign)	Option/7
167	A7	small sharp s	Option/S
168	A8	registered trademark	Option/R
169	A9	copyright	Option/G
170	AA	trademark	Option/2
171	AB	acute accent	Option/Shift/E
172	AC	diaeresis (umlaut)	Option/Shift/U
173	AD	not equal to	Option/=
174	AE	AE ligature	Option/Shift/'
175	AF	O with slash	Option/Shift/O
176	B0	infinity	Option/5
177	B1	plus or minus	Option/Shift/=
178	B2	less than or equal to	Option/,
179	B3	greater than or equal to	Option/.
180	B4	yen	Option/Y
181	B5	micro	Option/M
182	B6	partial differential	Option/D
183	B7	summation	Option/W
184	B8	product (capital pi)	Option/Shift/P
185	B9	small pi	Option/P
186	BA	integral	Option/B
187	BB	feminine ordinal	Option/9
188	BC	masculine ordinal	Option/0
189	BD	ohm (omega)	Option/Z
190	BE	ae ligature	Option/'
191	BF	o with slash	Option/O
192	C0	inverted question mark	Option/Shift/?
193	C1	inverted exclamation mark	Option/!
194	C2	not	Option/L
195	C3	square root	Option/V
196	C4	small script f	Option/F
197	C5	almost equal to	Option/X
198	C6	increment (delta)	Option/J
199	C7	left pointing guillemet	Option/\
200	C8	right pointing guillemet	Option/Shift/\
201	C9	horizontal ellipsis	Option/;

Dec	Hex	Description	Keystrokes
202	CA	non-breaking space	Option/Space Bar
203	CB	A with grave accent	Option/^ Shift/A
204	CC	A with tilde	Option/N Shift/A
205	CD	O with tilde	Option/N Shift/O
206	CE	OE ligature	Option/Shift/Q
207	CF	oe ligature	Option/Q
208	D0	endash	Option/-
209	D1	emdash	Option/Shift/-
210	D2	left double quote	Option/[
211	D3	right double quote	Option/Shift/[
212	D4	left single quote	Option/]
213	D5	right single quote	Option/Shift/]
214	D6	division	Option//
215	D7	lozenge	Option/Shift/V
216	D8	y with diaeresis	Option/U Y
217	D9	Y with diaeresis	Option/U Shift/Y
218	DA	fraction slash	Option/Shift/1
219	DB	currency or Euro	Option/Shift/2
220	DC	left pointing single guillemet	Option/Shift/3
221	DD	right pointing single guillemet	Option/Shift/4
222	DE	small fi ligature (capital thorn)	Option/Shift/5
223	DF	small fl ligature (small thorn)	Option/Shift/6
224	E0	double dagger	Option/Shift/7
225	E1	middle dot	Option/Shift/9
226	E2	low single quote	Option/Shift/0
227	E3	low double quote	Option/Shift/W
228	E4	per mille	Option/Shift/R
229	E5	A with circumflex	Option/Shift/M or Option/I Shift/A
230	E6	E with circumflex	Option/I Shift/E
231	E7	A with acute accent	Option/Shift/Y or Option/E Shift/A
232	E8	E with diaeresis	Option/U Shift/E
233	E9	E with grave accent	Option/^ Shift/E
234	EA	I with acute accent	Option/Shift/S or Option/E Shift/I
235	EB	I with circumflex	Option/Shift/D or Option/I Shift/I
236	EC	I with diaeresis	Option/Shift/F or Option/U Shift/I
237	ED	I with grave accent	Option/^ Shift/I
238	EE	O with acute accent	Option/Shift/H or Option/E

Dec	Hex	Description	Keystrokes
			Shift/O
239	EF	O with circumflex	Option/Shift/J or Option/I Shift/O
240	F0	Apple Computer logo	Option/Shift/K
241	F1	O with grave accent	Option/Shift/L or Option/ Shift/O
242	F2	U with acute accent	Option/Shift/; or Option/E Shift/U
243	F3	U with circumflex	Option/I Shift/U
244	F4	U with grave accent	Option/ Shift/U
245	F5	i without a dot	Option/Shift/B
246	F6	circumflex accent	Option/Shift/I
247	F7	tilde accent	Option/Shift/N
248	F8	macron	Option/Shift/,
249	F9	breve	Option/Shift/.
250	FA	dot accent	Option/H
251	FB	ring	Option/K
252	FC	cedilla accent	Option/Shift/Z
253	FD	double acute accent	Option/Shift/G
254	FE	ogonek	Option/Shift/X
255	FF	hacek	Option/Shift/T