

# TEX Support for Linux Libertine and Biolinum Fonts

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## 1 Introduction

This package provides support for use of the Linux Libertine and Linux Biolinum families of fonts in  $\TeX$ . Most features are usable with  $\TeX$  and dvips, pdf $\TeX$ , xe $\TeX$  and lua $\TeX$ ; the features in Section 5 are only usable with xe $\TeX$  or lua $\TeX$ . This package compatibly replaces several earlier packages (`libertine-type1`, `biolinum-type1`, `libertine`) and should provide partial compatibility with the obsolete `libertineotf` and `libertine-legacy` packages.

## 2 Installation

To install this package on a TDS-compliant  $\TeX$  system, download the file

```
tex-archive/install/fonts/libertine.tds.zip
```

and unzip at the root of an appropriate `texmf` tree, likely a personal or local tree. If necessary, update the file-name database (e.g., `texhash texmf`). Update the font-map files by enabling the Map file `libertine.map`.

## 3 Basic Usage

For most purposes, simply add

```
\usepackage{libertine}
```

to the preamble of your document. This will activate Libertine as the main (seriffed) text font, Biolinum as the sans font, and (from January 2013) LibertineMono as the monospaced font. It is recommended that the font encoding be set to T1 or LY1 but the default OT1 encoding is also supported. Available shapes in all series (except `tt`, which only has `it`) include:

<code>it</code>	italic
<code>sc</code>	small caps
<code>scit</code>	italic small caps

Slanted variants are not supported; the designed italic variants will be automatically substituted. The exceptions are the monospaced font and the bold series of Biolinum, for which designed italics are not currently available. Artificially slanted variants have been generated and treated as if they were italic.

To activate Libertine (without Biolinum), use the `libertine` (or `rm`) option. Similarly, to activate Biolinum (without Libertine) use the `biolinum` (or `sf` or `ss`) option. To use Biolinum as the main text font (as well as the sans font), use the option `sfdefault`. Use the `mono=false` (or `tt=false`) option to suppress activating LibertineMono. To activate single font families, use one or more of

```
\usepackage{libertineRoman}
```

```
\usepackage{libertineMono}
```

```
\usepackage{biolinum}
```

## 4 Advanced Usage

Lua $\TeX$  and Xe $\TeX$  users who might prefer to use Type 1 fonts or who wish to avoid `fontspec` may use the `type1` (or `nofontspec`) option. The `libertine-type1.sty`, `biolinum-type1.sty` and `libertineMono-type1.sty` packages provide compatibility with older packages. For legacy documents that use only basic facilities of `libertineotf`, a wrapper package `libertineotf.sty` is provided. The following features of the original `libertine` or `libertineotf` packages are *not* supported:

- font-features such as `Ligatures` or `Scale` as option parameters
- the `Outline` or `Shadow` fonts
- commands `\Lnum`, `\Lpnum`, `\Lcnum`, etc.
- environments `Ltable` and `libertineenumerate`

If your documents use any of the features listed above, you may have to continue to use the `libertineotf` package (which is still available from CTAN) or access the OpenType fonts directly using `fontspec`.

The following options are available in all styles (except monospaced):

<code>oldstyle (osf)</code>	old-style figures
<code>lining (nf, lf)</code>	lining figures
<code>proportional (p)</code>	varying-width figures
<code>tabular (t)</code>	fixed-width figures

The defaults (from January 2013) are `lining` and `tabular`. These apply to both `Libertine` and `Biolinum`; to change the default figure style of just the `Biolinum` (sans) fonts, use options

`sflining (sflf)` or `sfoldstyle (sfosf, osfss)`

`sftabular (sft)` or `sfproportional (sfp)`

The `semibold (sb)` option will enable use of the semi-bold series of `Libertine`; this has no effect on the `Biolinum` fonts, for which there is no semi-bold variant. The options `scale=<number>` (or `scaled=<number>`) will scale the `Biolinum` fonts but have no effect on the `Libertine` fonts. Similarly, the options `llscale=<number>` (or `llscaled=<number>`) and `ttscale=<number>` (or `ttscaled=<number>`) will scale the `LinuxLibertine` and `LibertineMono` fonts, respectively. Any of the “Boolean” options, such as `osf`, may also be used in the form `osf=true` or `osf=false`.

The option `defaultfeatures=...` allows the user to add default OpenType features; for example, `defaultfeatures={Variant=01}` will force use of the Stylistic Set 1 variant glyphs.

Commands `\oldstylenums{...}` and `\oldstylenumsf{...}` are defined to allow for local use of old-style figures in `Libertine` and `Biolinum`, respectively, if lining figures is the default, and similarly `\liningnums{...}` and `\liningnumsf{...}`.

Similarly, commands `\tabularnums{...}` and `\tabularnumsf{...}` are defined to allow local use of monospaced figures in Libertine or Biolinum, respectively, if proportional figures is the default, and similarly `\proportionalnums{...}` and `\proportionalnumsf{...}`.

Superior numbers (for footnote markers) are available using `\sufigures` or `\textsu{...}`.

Command `\useosf` switches the default figure style for Libertine and Biolinum to old-style figures; this is primarily for use *after* calling a math package (such as `newtxmath` with the `libertine` option) with lining figures as the default.

The following macros select the font family indicated:

<code>\libertine</code>	Libertine
<code>\libertineSB</code>	Libertine with semibold
<code>\libertineOsF</code>	Libertine with oldstyle figures
<code>\libertineLF</code>	Libertine with lining figures
<code>\libertineDisplay</code>	Libertine Display
<code>\libmono</code>	Libertine Monospaced
<code>\libertineInitial</code>	Libertine Initials
<code>\biolinum</code>	Biolinum
<code>\biolinumOsF</code>	Biolinum with oldstyle figures
<code>\biolinumLF</code>	Biolinum with lining figures

Macro `\libertineInitialGlyph{...}` produces a glyph in the Libertine Initial font; Appendix C has a table of some of the glyphs.

## 5 OpenType Fonts

The features in this section are only available to `xeLaTeX` and `luaLaTeX` users.

Macros `\libertineGlyph{...}` and `\biolinumGlyph{...}` produce the glyph named in the argument in the Libertine or Biolinum font, respectively; for example, in regular-weight and upright-shape, `\libertineGlyph{seven.cap}` and `\libertineGlyph{uniE10F}` both produce a lining 7 that matches the height of capital letters, as in

K7L 3N6

Similarly, `\biolinumKeyGlyph{...}` produces the named glyph in the Biolinum Keyboard font; for example: `\biolinumKeyGlyph{seven}` produces 7. A large number of macros of the form `\LKey...` or `\LMouse...` are provided to simplify production of glyphs in the Biolinum Keyboard font; see Appendix A. Appendix B has a table of the entire Linux Biolinum Keyboard font, with corresponding glyph name and codepoint.

The directory `/fonts/opentype/public/libertine` has the fonts used for these features, as follows:

File name	Internal name	Description
LinBiolinum_RBO.otf	LinBiolinumOBO	sans serif bold italic (oblique)
LinBiolinum_RB.otf	LinBiolinumOB	sans serif bold
LinBiolinum_RI.otf	LinBiolinumOI	sans serif italic
LinBiolinum_R.otf	LinBiolinumO	sans serif regular
LinLibertine_RBI.otf	LinLibertineOBI	bold italic
LinLibertine_RB.otf	LinLibertineOB	bold
LinLibertine_RI.otf	LinLibertineOI	italic
LinLibertine_R.otf	LinLibertineO	regular
LinLibertine_RZI.otf	LinLibertineOZI	semibold italic
LinLibertine_RZ.otf	LinLibertineOZ	semibold
LinLibertine_MBO.otf	LinLibertineMOBO	mono bold italic (oblique)
LinLibertine_MB.otf	LinLibertineMOB	mono bold
LinLibertine_MO.otf	LinLibertineMOO	mono italic (oblique)
LinLibertine_M.otf	LinLibertineMO	mono
LinBiolinum_K.otf	LinBiolinumOKb	keyboard
LinLibertine_I.otf	LinLibertineIO	decorative capitals
LinLibertine_DR.otf	LinLibertineDisplayO	a display (titling) font

## 6 Concluding Remarks

For compatible mathematics, it is recommended to use

```
\usepackage[libertine]{newtxmath}
```

with pdf $\LaTeX$  and

```
\usepackage{unicode-math}
\setmathfont[Scale=MatchUppercase]{libertinusmath-regular.otf}
```

with xe $\LaTeX$  or lua $\LaTeX$ .

The original OpenType fonts were created by Philipp H. Poll (gillian@linuxlibertine.org) and are licensed under the terms of the GNU General Public License (Version 2, with font exception) and under the terms of the Open Font License. For details look into the doc directory of the distribution or at

<http://www.linuxlibertine.org/>

The Glyph and KeyCap support was adapted from the original libertine package by Michael Niedermair.

Three of the Libertine fonts were modified by Michael Sharpe (msharpe@ucsd.edu) using fontforge to correct minor problems, including adding three missing ligatures (*fl*, *ffi*, *ffi*) to the bold-italic font.

















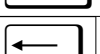







The Type 1 fonts were created using cfftot1 or fontforge. The internal font-family names of the Type 1 fonts have been changed to Linux Libertine T and Linux Biolinum T to avoid interfering with xe $\LaTeX$  users who access system fonts.





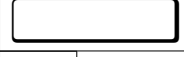





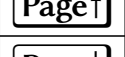
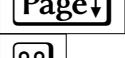















The support files were created using autoinst. The support files are licensed under the terms of the LaTeX Project Public License. See Appendix D for more detailed discussion of the implementation.

Thanks to Herbert Voss, Patrick Gundlach, Silke Hofstra, Marc Penninga, Michael Sharpe, Denis Bitouzé, and Khaled Hosny for their assistance. The maintainer of this package is Bob Tennent ([rdt@cs.queensu.ca](mailto:rdt@cs.queensu.ca))



















## A Biolinum KeyCap Macros

### A.1 Special Keys





Tux	\LKeyTux	
Win	\LKeyWin	
Menu	\LKeyMenu	
Strg	\LKeyStrg	
Ctrl	\LKeyCtrl	
Alt	\LKeyAlt	
AltGr	\LKeyAltGr	
Shift	\LKeyShift	
Enter	\LKeyEnter	
Tab	\LKeyTab	
CapsLock	\LKeyCapsLock	
Pos	\LKeyPos	
Entf	\LKeyEntf	
Einf	\LKeyEinf	
Leer	\LKeyLeer	
Esc	\LKeyEsc	
Ende	\LKeyEnde	
Back	\LKeyBack	
Up	\LKeyUp	
Dwon	\LKeyDown	
Left	\LKeyLeft	
Right	\LKeyRight	
PgUp	\LKeyPgUp	
PgDown	\LKeyPgDown	

At	\LKeyAt	
Fn	\LKeyFn	
Home	\LKeyHome	
Del	\LKeyDel	
Space	\LKeySpace	
ScreenUp	\LKeyScreenUp	
ScreenDown	\LKeyScreenDown	
Ins	\LKeyIns	
End	\LKeyEnd	
GNU	\LKeyGNU	
PageUp	\LKeyPageUp	
PageDown	\LKeyPageDown	
Command	\LKeyCommand	
OptionKey	\LKeyOptionKey	
F1	\LKeyF{1}	
F2	\LKeyF{2}	
F3	\LKeyF{3}	
F4	\LKeyF{4}	
F5	\LKeyF{5}	
F6	\LKeyF{6}	
F7	\LKeyF{7}	
F8	\LKeyF{8}	
F9	\LKeyF{9}	
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F13	\LKeyF{13}	

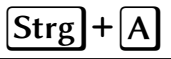
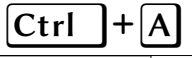
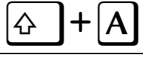
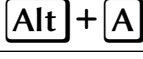
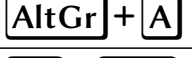
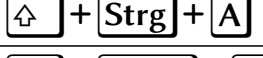







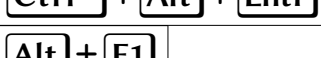
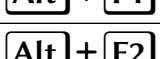

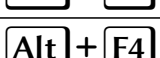
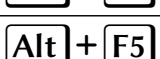
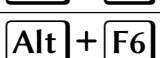
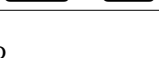









































































F14	\LKeyF{14}	
F15	\LKeyF{15}	
F16	\LKeyF{16}	
PAD0	\LKeyPad{1}	
PAD1	\LKeyPad{1}	
PAD2	\LKeyPad{2}	
PAD3	\LKeyPad{3}	
PAD4	\LKeyPad{4}	
PAD5	\LKeyPad{5}	
PAD6	\LKeyPad{6}	
PAD7	\LKeyPad{7}	
PAD8	\LKeyPad{8}	
PAD9	\LKeyPad{9}	
PAD10	\LKeyPad{10}	
PAD11	\LKeyPad{11}	
PAD12	\LKeyPad{12}	
PAD13	\LKeyPad{13}	
PAD14	\LKeyPad{14}	










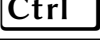


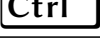











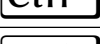


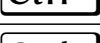
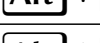

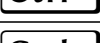
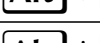

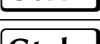
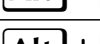

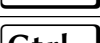


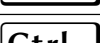
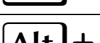




## A.2 General Keyboard

0	\LKey{zero},\LKey{0}	
9	\LKey{nine},\LKey{9}	
A	\LKey{A}	
Z	\LKey{Z}	







## A.3 Keyboard Shortcuts

Strg-A	\LKeyStrgX{A}	
Ctrl-A	\LKeyCtrlX{A}	
Shift-A	\LKeyShiftX{A}	
Alt-A	\LKeyAltX{A}	
AltGr-A	\LKeyAltGrX{A}	
Shift-Strg-A	\LKeyShiftStrgX{A}	
Shift-Ctrl-A	\LKeyShiftCtrlX{A}	
Shift-Alt-A	\LKeyShiftAltX{A}	
Shift-AltGr-A	\LKeyShiftAltGrX{A}	
Strg-Alt-A	\LKeyStrgAltX{A}	
Strg-Alt-Entf	\LKeyStrgAltEnt	
Strg-Alt-Entf	\LKeyReset	
Ctrl-Alt-A	\LKeyCtrlAltX{A}	
Ctrl-Alt-Entf	\LKeyCtrlAltEnt	
Alt-F1	\LKeyAltF{1}	
Alt-F2	\LKeyAltF{2}	
Alt-F3	\LKeyAltF{3}	
Alt-F4	\LKeyAltF{4}	
Alt-F5	\LKeyAltF{5}	
Alt-F6	\LKeyAltF{6}	






Alt-F7	\LKeyAltF{7}	 + 
Alt-F8	\LKeyAltF{8}	 + 
Alt-F9	\LKeyAltF{9}	 + 
Alt-F10	\LKeyAltF{10}	 + 
Alt-F11	\LKeyAltF{11}	 + 
Alt-F12	\LKeyAltF{12}	 + 
Alt-F13	\LKeyAltF{13}	 + 
Alt-F14	\LKeyAltF{14}	 + 
Alt-F15	\LKeyAltF{15}	 + 
Alt-F16	\LKeyAltF{16}	 + 
Strg-Alt-F1	\LKeyStrgAltF{1}	 +  + 
Strg-Alt-F2	\LKeyStrgAltF{2}	 +  + 
Strg-Alt-F3	\LKeyStrgAltF{3}	 +  + 
Strg-Alt-F4	\LKeyStrgAltF{4}	 +  + 
Strg-Alt-F5	\LKeyStrgAltF{5}	 +  + 
Strg-Alt-F6	\LKeyStrgAltF{6}	 +  + 
Strg-Alt-F7	\LKeyStrgAltF{7}	 +  + 
Strg-Alt-F8	\LKeyStrgAltF{8}	 +  + 
Strg-Alt-F9	\LKeyStrgAltF{9}	 +  + 
Strg-Alt-F10	\LKeyStrgAltF{10}	 +  + 
Strg-Alt-F11	\LKeyStrgAltF{11}	 +  + 
Strg-Alt-F12	\LKeyStrgAltF{12}	 +  + 
Strg-Alt-F13	\LKeyStrgAltF{13}	 +  + 
Strg-Alt-F14	\LKeyStrgAltF{14}	 +  + 
Strg-Alt-F15	\LKeyStrgAltF{15}	 +  + 
Strg-Alt-F16	\LKeyStrgAltF{16}	 +  + 
Ctrl-Alt-F1	\LKeyCtrlAltF{1}	 +  + 

Ctrl-Alt-F2	\LKeyCtrlAltF{2}	 +  + 
Ctrl-Alt-F3	\LKeyCtrlAltF{3}	 +  + 
Ctrl-Alt-F4	\LKeyCtrlAltF{4}	 +  + 
Ctrl-Alt-F5	\LKeyCtrlAltF{5}	 +  + 
Ctrl-Alt-F6	\LKeyCtrlAltF{6}	 +  + 
Ctrl-Alt-F7	\LKeyCtrlAltF{7}	 +  + 
Ctrl-Alt-F8	\LKeyCtrlAltF{8}	 +  + 
Ctrl-Alt-F9	\LKeyCtrlAltF{9}	 +  + 
Ctrl-Alt-F10	\LKeyCtrlAltF{10}	 +  + 
Ctrl-Alt-F11	\LKeyCtrlAltF{11}	 +  + 
Ctrl-Alt-F12	\LKeyCtrlAltF{12}	 +  + 
Ctrl-Alt-F13	\LKeyCtrlAltF{13}	 +  + 
Ctrl-Alt-F14	\LKeyCtrlAltF{14}	 +  + 
Ctrl-Alt-F15	\LKeyCtrlAltF{15}	 +  + 
Ctrl-Alt-F16	\LKeyCtrlAltF{16}	 +  + 

















































#### A.4 Mouse Buttons (Three-Button Mice)

Empty	\LMouseEmpty	
No	\LMouseN	
Left	\LMouseL	
Middle	\LMouseM	
Right	\LMouseR	
LeftRight	\LMouseLR	

#### A.5 Mouse Buttons (Two-Button Mice)

Empty	\LMouseIIEmpty	
No	\LMouseIIN	
Left	\LMouseIIL	
Right	\LMouseIIR	
LeftRight	\LMouseIILR	

## B Linux Biolinum Keyboard Glyphs

	space		comma
	uni0020		uni002C
	exclam		hyphen
	uni0021		uni002D
	quotedbl		period
	uni0022		uni002E
	numbersign		slash
	uni0023		uni002F
	dollar		zero
	uni0024		uni0030
	percent		one
	uni0025		uni0031
	ampersand		two
	uni0026		uni0032
	quotesingle		three
	uni0027		uni0033
	parenleft		four
	uni0028		uni0034
	parenright		five
	uni0029		uni0035
	asterisk		six
	uni002A		uni0036
	plus		seven
	uni002B		uni0037

8	eight
8	uni0038
9	nine
9	uni0039
:	colon
:	uni003A
;	semicolon
;	uni003B
<	less
<	uni003C
=	equal
=	uni003D
>	greater
>	uni003E
?	question
?	uni003F
@	at
@	uni0040
A	A
A	uni0041
B	B
B	uni0042
C	C
C	uni0043
D	D

D	uni0044
E	E
E	uni0045
F	F
F	uni0046
G	G
G	uni0047
H	H
H	uni0048
I	I
I	uni0049
J	J
J	uni004A
K	K
K	uni004B
L	L
L	uni004C
M	M
M	uni004D
N	N
N	uni004E
O	O
O	uni004F
P	P
P	uni0050

Q	Q
Q	uni0051
R	R
R	uni0052
S	S
S	uni0053
T	T
T	uni0054
U	U
U	uni0055
V	V
V	uni0056
W	W
W	uni0057
X	X
X	uni0058
Y	Y
Y	uni0059
Z	Z
Z	uni005A
[	bracketleft
[	uni005B
\	backslash
\	uni005C
]	bracketright

]	uni005D
^	asciicircum
^	uni005E
_	underscore
_	uni005F
`	grave
`	uni0060
a	a
a	uni0061
b	b
b	uni0062
c	c
c	uni0063
d	d
d	uni0064
e	e
e	uni0065
f	f
f	uni0066
g	g
g	uni0067
h	h
h	uni0068
i	i
i	uni0069



j	j	v	uni0076
j	uni006A	w	w
k	k	w	uni0077
k	uni006B	x	x
l	l	x	uni0078
l	uni006C	y	y
m	m	y	uni0079
m	uni006D	z	z
n	n	z	uni007A
n	uni006E	{	braceleft
o	o	{	uni007B
o	uni006F		bar
p	p		uni007C
p	uni0070	}	braceright
q	q	}	uni007D
q	uni0071	~	asciitilde
r	r	~	uni007E
r	uni0072	!	exclamdown
s	s	!	uni00A1
s	uni0073	¢	cent
t	t	¢	uni00A2
t	uni0074	£	sterling
u	u	£	uni00A3
u	uni0075	¤	currency
v	v	¤	uni00A4

¥	yen
¥	uni00A5
¡	brokenbar
¡	uni00A6
§	section
§	uni00A7
¨	dieresis
¨	uni00A8
«	guillemotleft
«	uni00AB
□	uni00AD
°	degree
°	uni00B0
±	plusminus
±	uni00B1
´	acute
´	uni00B4
μ	uni00B5
•	periodcentered
•	uni00B7
¸	cedilla
¸	uni00B8
»	guillemotright
»	uni00BB
À	Agrave
À	uni00C0

Á	Aacute
Á	uni00C1
Â	Acircumflex
Â	uni00C2
Ã	Atilde
Ã	uni00C3
Ä	Adieresis
Ä	uni00C4
Å	Aring
Å	uni00C5
Ç	Ccedilla
Ç	uni00C7
È	Egrave
È	uni00C8
É	Eacute
É	uni00C9
Ê	Ecircumflex
Ê	uni00CA
Ë	Edieresis
Ë	uni00CB
Ì	Igrave
Ì	uni00CC
Í	Iacute
Í	uni00CD
Î	Icircumflex

Î	uni00CE	Û	Ucircumflex
Ï	Idieresis	Ü	uni00DB
İ	uni00CF	Ü	Udieresis
Ð	Eth	Ü	uni00DC
Đ	uni00D0	Ý	Yacute
Ñ	Ntilde	Ý	uni00DD
Ñ	uni00D1	Þ	Thorn
Ò	Ograve	Þ	uni00DE
Ò	uni00D2	ß	germandbls
Ó	Oacute	ß	uni00DF
Ó	uni00D3	à	agrave
Ô	Ocircumflex	à	uni00E0
Ô	uni00D4	á	aacute
Õ	Otilde	á	uni00E1
Õ	uni00D5	â	acircumflex
Ö	Odieresis	â	uni00E2
Ö	uni00D6	ã	atilde
×	multiply	ã	uni00E3
×	uni00D7	ä	adieresis
Ø	Oslash	ä	uni00E4
Ø	uni00D8	å	aring
Ù	Ugrave	å	uni00E5
Ú	uni00D9	æ	ae
Ú	Uacute	æ	uni00E6
Ú	uni00DA	ç	cedilla

ç	uni00E7	ô	ocircumflex
è	egrave	ô	uni00F4
è	uni00E8	õ	otilde
é	eacute	õ	uni00F5
é	uni00E9	ö	odieresis
ê	ecircumflex	ö	uni00F6
ê	uni00EA	÷	divide
ë	edieresis	÷	uni00F7
ë	uni00EB	ø	oslash
ì	igrave	ø	uni00F8
ì	uni00EC	ù	ugrave
í	iacute	ù	uni00F9
í	uni00ED	ú	uacute
î	icircumflex	ú	uni00FA
î	uni00EE	û	ucircumflex
ï	idieresis	û	uni00FB
ï	uni00EF	ü	udieresis
ö	eth	ü	uni00FC
ö	uni00F0	ý	yacute
ñ	ntilde	ý	uni00FD
ñ	uni00F1	þ	thorn
ò	ograve	þ	uni00FE
ò	uni00F2	ÿ	ydieresis
ó	oacute	ÿ	uni00FF
ó	uni00F3	Ā	Amacron

Ā	uni0100	č	ccaron
ā	amacron	č	uni010D
ā	uni0101	Ǧ	Dcaron
Ǻ	Abreve	Ǧ	uni010E
Ǻ	uni0102	ď	dcaron
ǻ	abreve	ď	uni010F
ǻ	uni0103	Đ	Dcroat
Ą	Aogonek	Đ	uni0110
Ą	uni0104	đ	dcroat
ą	aogonek	đ	uni0111
ą	uni0105	Ē	Emacron
Ć	Cacute	Ē	uni0112
Ć	uni0106	ē	emacron
ć	cacute	ē	uni0113
ć	uni0107	Ě	Ebreve
Ĉ	Ccircumflex	Ě	uni0114
Ĉ	uni0108	ě	ebreve
ĉ	ccircumflex	ě	uni0115
ĉ	uni0109	É	Edotaccent
Ċ	Cdotaccent	É	uni0116
Ċ	uni010A	è	edotaccent
ċ	cdotaccent	è	uni0117
ċ	uni010B	Ę	Eogonek
Č	Ccaron	Ę	uni0118
Č	uni010C	ę	eogonek

Ě	uni0119	H̄	Hbar
Ě	Ecaron	H̄	uni0126
Ě	uni011A	h̄	hbar
ě	ecaron	h̄	uni0127
ě	uni011B	İ̇	Itilde
Ĝ	Gcircumflex	İ̇	uni0128
Ĝ	uni011C	ĩ	itilde
ĝ	gcircumflex	ĩ	uni0129
ĝ	uni011D	Ī	I macron
Ġ	Gbreve	Ī	uni012A
Ġ	uni011E	ī	imacron
ğ	gbreve	ī	uni012B
ğ	uni011F	İ̇	I breve
Ġ̇	Gdotaccent	İ̇	uni012C
Ġ̇	uni0120	ĩ	ibreve
ġ	gdotaccent	ĩ	uni012D
ġ	uni0121	Į	Iogonek
Ģ	Gcommaaccent	Į	uni012E
Ģ	uni0122	į	iogonek
ģ	gcommaaccent	į	uni012F
ģ	uni0123	İ̇	Idotaccent
Ĥ	Hcircumflex	İ̇	uni0130
Ĥ	uni0124	ı	dotlessi
ĥ	hcircumflex	ı	uni0131
ĥ	uni0125	IJ	IJ

Ų	uni0132	Ł	Ldot
ų	ij	Ł	uni013F
ŵ	uni0133	ł	ldot
Ĵ	Jcircumflex	ł	uni0140
Ĵ	uni0134	Ł	Lslash
ĵ	jcircumflex	Ł	uni0141
ĵ	uni0135	ł	lslash
Ḳ	Kcommaaccent	ł	uni0142
Ḳ	uni0136	Ń	Nacute
ḳ	kcommaaccent	Ń	uni0143
ḳ	uni0137	ń	nacute
Ḵ	kgreenlandic	ń	uni0144
Ḵ	uni0138	Ń	Ncommaaccent
Ł	Lacute	Ń	uni0145
Ł	uni0139	ņ	ncommaaccent
ł	lacute	ņ	uni0146
ł	uni013A	Ň	Ncaron
Ł	Lcommaaccent	Ň	uni0147
Ł	uni013B	ň	ncaron
ł	lcommaaccent	ň	uni0148
ł	uni013C	ñ	napostrophe
Ĺ	Lcaron	ñ	uni0149
Ĺ	uni013D	Ō	Omacron
ĺ	lcaron	Ō	uni014C
ĺ	uni013E	ō	omacron

ō	uni014D	Ŝ	Scircumflex
Ŏ	Obreve	Ŝ	uni015C
Ŏ	uni014E	ŝ	scircumflex
ö	obreve	ŝ	uni015D
ö	uni014F	Ș	Scedilla
Ő	Ohungarumlaut	Ș	uni015E
Ő	uni0150	ș	scedilla
ő	ohungarumlaut	ș	uni015F
ő	uni0151	Š	Scaron
Ŕ	Racute	Š	uni0160
Ŕ	uni0154	š	scaron
ŕ	racute	š	uni0161
ŕ	uni0155	Ț	Tcedilla
Ŗ	Rcommaaccent	Ț	uni0162
Ŗ	uni0156	ț	tcedilla
ŗ	rcommaaccent	ț	uni0163
ŗ	uni0157	Ț̃	Tcaron
Ř	Rcaron	Ț̃	uni0164
Ř	uni0158	ť	tcaron
ř	rcaron	ť	uni0165
ř	uni0159	Ȧ	Tbar
Ś	Sacute	Ȧ	uni0166
Ś	uni015A	Ȧ	tbar
ś	sacute	Ȧ	uni0167
ś	uni015B	Ů	Utilde



Ů	uni0168	ŵ	wcircumflex
ů	utilde	ŵ	uni0175
ů	uni0169	Ŷ	Ycircumflex
Ů	Umacron	Ŷ	uni0176
Ů	uni016A	ŷ	ycircumflex
ů	umacron	ŷ	uni0177
ů	uni016B	Ÿ	Ydieresis
Ů	Ubreve	Ÿ	uni0178
Ů	uni016C	Ž	Zacute
ů	ubreve	Ž	uni0179
ů	uni016D	ž	zacute
Ů	Uring	ž	uni017A
Ů	uni016E	Ž	Zdotaccent
ů	uring	Ž	uni017B
ů	uni016F	ž	zdotaccent
Ů	Uhungarumlaut	ž	uni017C
Ů	uni0170	Ž	Zcaron
ů	uhungarumlaut	Ž	uni017D
ů	uni0171	ž	zcaron
Ů	Uogonek	ž	uni017E
Ů	uni0172	h	h.superior
ů	uogonek	h	uni02B0
ů	uni0173	h	hook.superior
Ŵ	Wcircumflex	h	uni02B1
Ŵ	uni0174	j	j.superior
		j	uni02B2

Ɽ	r.superior	ⱦ	uni02C5
Ɽ	uni02B3	Ɽ	circumflex
Ɽ	rturned.superior	Ɽ	uni02C6
Ɽ	uni02B4	ⱦ	caron
Ɽ	rhookturned.superior	ⱦ	uni02C7
Ɽ	uni02B5	Ɽ	uni02C8
Ɽ	Rsmallinverted.superior	Ɽ	uni02C9
Ɽ	uni02B6	Ɽ	uni02CA
Ɽ	w.superior	Ɽ	uni02CB
Ɽ	uni02B7	Ɽ	uni02CC
Ɽ	y.superior	Ɽ	uni02CD
Ɽ	uni02B8	Ɽ	uni02CE
Ɽ	uni02B9	Ɽ	uni02CF
Ɽ	uni02BA	Ɽ	uni02D0
Ɽ	uni02BB	Ɽ	uni02D1
Ɽ	afii57929	Ɽ	uni02D2
Ɽ	uni02BC	Ɽ	uni02D3
Ɽ	afii64937	Ɽ	uni02D4
Ɽ	uni02BD	Ɽ	uni02D5
Ɽ	uni02BE	Ɽ	uni02D6
Ɽ	uni02BF	Ɽ	uni02D7
Ɽ	uni02C0	Ɽ	breve
Ɽ	uni02C1	Ɽ	uni02D8
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


















































◦	uni02DA	◌◌	uni0302
ˆ	ogonek	◌◌	tildecomb
˚	uni02DB	◌◌	uni0303
˜	tilde	◌◌	uni0304
˘	uni02DC	◌◌	uni0305
”	hungarumlaut	◌◌	uni0306
”	uni02DD	◌◌	uni0307
˘	uni02DE	◌◌	uni0308
×	uni02DF	◌◌	hookabovecomb
Ÿ	gammalatin.superior	◌◌	uni0309
Ÿ	uni02E0	◌◌	uni030A
l	l.superior	◌◌	uni030B
l	uni02E1	◌◌	uni030C
s	s.superior	◌◌	uni030D
s	uni02E2	◌◌	uni030E
x	x.superior	◌◌	uni030F
x	uni02E3	◌◌	uni0310
ɣ	glottalstopreversed.superior	◌◌	uni0311
ɣ	uni02E4	◌◌	uni0312
∇	uni02EC	◌◌	uni0313
=	uni02ED	◌◌	uni0314
”	uni02EE	◌◌	uni0315
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





































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◡	uni031E	◡	uni0358
◡	uni031F	◡	uni0359
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◡	dotbelowcomb	◡	uni035D
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



















































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
























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Ⲇ	afii57676	Ⲛ	uni05E8
Ⲇ	uni05DC	ⲛ	afii57689
ⲇ	afii57677	ⲛ	uni05E9
ⲇ	uni05DD	ⲛ	afii57690
Ⲉ	afii57678	ⲛ	uni05EA
Ⲉ	uni05DE	ⲛ	afii57716
ⲉ	afii57679	ⲛ	uni05F0
ⲉ	uni05DF	ⲛ	afii57717
Ⲋ	afii57680	ⲛ	uni05F1
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ⲍ	afii57683	⬆	uni2191
ⲍ	uni05E3	➡	arrowright
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		↕	arrowupdn


























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	uni2197		Searrow
	uni2198		uni21D8
	uni2199		Swarrow
	uni219A		uni21D9
	uni219B		uni2318
	uni21A5		uni2325
	uni21A7		uni2326
	uni21BC		uni2327
	uni21BD		uni232B
	uni21C0		uni237D
	uni21C1		uni2380
	arrowdblleft		uni2423
	uni21D0		filledbox
	arrowdblup		uni25A0
	uni21D1		H22073
	arrowdblright		uni25A1
	uni21D2		triagup
	arrowdbldown		uni25B2
	uni21D3		uni25B3
	arrowdblboth		uni25B6
	uni21D4		uni25B7
	uni21D5		triagdn
	Nwarrow		uni25BC
	uni21D6		uni25BD

	uni25C0		uni2627
	uni25C1		uni262F
	uni25C6		uni2639
	uni25C7		uni263A
	uni25C9		uni263B
	lozenge		uni263C
	uni25CA		uni263D
	circle		uni263E
	uni25CB		uni263F
	uni25CE		female
	H18533		uni2640
	uni25CF		uni2641
	uni25D0		male
	uni25D1		uni2642
	uni25D2		uni2643
	uni25D3		uni2644
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	uni25D5		uni2646
	uni25D6		uni2647
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	openbullet		uni2649
	uni25E6		uni264A
	uni2605		uni264B
	uni2619		uni264C
	uni261B		uni264D
	uni261E		uni264E



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	uni2651		uni277B
	uni2652		uni277C
	uni2653		uni277D
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	uni2663		uni277F
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	uni2669		uniE104
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	uni266A		uniE129
	musicalnotedbl		uniE12A
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	uni266C		uniE131
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	uni2698		uniE133
	uni26A2		uniE134
	uni26A3		uniE135
	uni26A4		uniE138
	uni26A5		uniE139
	uni26AD		uniE13A
	uni2767		uniE13C
	uni2776		uniE13D
	uni2777		uniE168
	uni2778		B_a_c_k

	uniE16E
	S_t_r_g
	uniE170
	A_l_t
	uniE171
	A_l_t_G_r
	uniE172
	C_t_r_l
	uniE173
	S_h_i_f_t
	uniE174
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	uniE1B1
	grave.cap
	uniE358
	acute.cap
	uniE359
	circumflex.cap
	uniE35A
	caron.cap

◡	uniE35B	◡	breve.cyr
◡	breve.cap	◡	uniE360
◡	uniE35C	◡	breve.cyr
◡	hungarumlaut.cap	◡	uniE361
◡	uniE35D	◡	dieresis.cap
◡	space_uni030F.cap	◡	uniE362
◡	uniE35E	◡	hookabovcomb.cap
◡	breveinvertedcmb.cap	◡	uniE363
◡	uniE35F	◡	uniFFFD

## C Selected Libertine Initials

0	zero	9	nine	I	I	R	R
1	one	A	A	J	J	S	S
2	two	B	B	K	K	T	T
3	three	C	C	L	L	U	U
4	four	D	D	M	M	V	V
5	five	E	E	N	N	W	W
6	six	F	F	O	O	X	X
7	seven	G	G	P	P	Y	Y
8	eight	H	H	Q	Q	Z	Z

## D Implementation Notes

### D.1 Aims

Modern OpenType and TrueType fonts are not directly usable with traditional typesetting engines such as  $\text{\LaTeX}$  or  $\text{\pdf\LaTeX}$ . On the other hand, many documents that use traditional font-selection mechanisms cannot be processed by emerging new technologies such as  $\text{\XeTeX}$  and  $\text{\lua\LaTeX}$ . The primary aim of the `libertine` package is, as much as possible, to allow documents to use Linux Libertine and Biolinum fonts compatibly with *all* current  $\text{\LaTeX}$  engines. Another aim is maintainability: it should be possible to update the package easily when updated fonts become available.

### D.2 The Fonts

OpenType Linux Libertine and Biolinum fonts (with `otf` extensions) may be downloaded from <http://sourceforge.net/projects/linuxlibertine/files/linuxlibertine/>. There are a few problems with the current versions of the fonts (5.3.0).

- Currently, there is no bold-italic variant of the Biolinum family; an *ad hoc* solution is to use `fontforge` to generate an artificially slanted version of the bold variant. Note that the most recent version of `fontforge` must be used on Biolinum fonts; an earlier version will generate fonts with incorrect `ex-height`.
- Slanted (oblique) variants are not available from the upstream site. These could be generated easily but we have decided not to attempt to support slanted variants for the fonts; the italic (or fake-italic) variants will be silently substituted.
- The bold-italic variant of the Libertine family is missing several ligatures; the ligatures would be taken from the regular-weight italic variant, which is unacceptable. Michael Sharpe ([msharpe@ucsd.edu](mailto:msharpe@ucsd.edu)) has generated the missing glyphs (*fl*, *ffl*, *ffi*) and added them to the `otf` file.
- Currently, Libertine Monospaced does not have bold, italic or bold-italic variants; `fontforge` has been used to generate artificially emboldened and/or slanted variants.
- When several of the fonts are opened in `fontforge`, warning messages are generated about errors in the glyph programs. Some of these are sufficient to cause failures or even crashes when conversion to Type 1 format is attempted using `cfftot1`. Michael Sharpe has corrected the most serious of these. In some cases, `fontforge` has been used to convert the format, as it is less sensitive than `cfftot1` to faulty glyph programs.

In some  $\text{\TeX}$  distributions, the OpenType and Type 1 fonts are installed as system fonts, and  $\text{\XeTeX}$  or  $\text{\lua\LaTeX}$  users may attempt to select the OpenType fonts directly by their Postscript FontName. If Type 1 versions with the *same* FontName have been installed, the latter may be selected by the system font-selection mechanism. To avoid this, it is appropriate to modify the FontNames of the `otf` fonts before converting to Type 1 format (but not *distribute* these re-named `otf` fonts). The Type 1 Libertine and Biolinum fonts distributed in this package have had the 0 (for Opentype) in their FontNames replaced by T (for Type 1) using `fontforge`. This font-renaming must be done *before* generating the  $\text{\LaTeX}$ -support files, or else `dvi2ps` will fail.

### D.3 Generation of Support Files

The `otftotfm` tool of the `lcdftypetools` package and the `autoinst` script of the `fontools` package are convenient tools for generating  $\text{\LaTeX}$  support files for OpenType families. To generate

a texmf tree for the libertine package on a Unix-like system, one puts all the otf files to be supported for  $\text{\LaTeX}$  or  $\text{\pdf\LaTeX}$ <sup>1</sup> into a directory, creates a texmf sub-directory and executes

```
autoinst -target=./texmf -encoding=OT1,T1,LY1,TS1 \
  -vendor=public -typeface=libertine -noupdmap \
  -noswash -notitling -noornaments \
  *.otf
```

Then move to the texmf directory and do

```
rm -rf fonts/pl fonts/vpl fonts/truetype fonts/type42
mv fonts/enc/dvips/public fonts/enc/dvips/libertine
mv fonts/map/dvips/public fonts/map/dvips/libertine
```

to delete irrelevant sub-directories and re-name directories as required by TeXLive.

A few additional steps are needed.

### D.3.1 Renaming of the Encoding Files

otftotfm generates encoding files with filenames of the form a\_XXXXXX; to avoid filename conflicts with other packages, the files have been re-named to have a distinctive prefix using the command

```
rename_enc libertine lbtn
```

executed in the texmf directory, where rename\_enc is a PERL script in

```
doc/fonts/libertine
```

Then in fonts/map/dvips/libertine, the map files can be concatenated into a single file libertine.map and all instances of a\_ changed to lbtn\_; the original map files have been deleted.

### D.3.2 Installation of the Fonts

The otf files after corrections (but before re-naming) are installed into the texmf tree in the following sub-directory:

```
fonts/OpenType/public/libertine/
```

The autoinst script will normally use cfftot1 to create pfb files with appropriate internal names and filenames; but if more than one font family has been processed or if cfftot1 runs into trouble, this may not happen. In that case, one must do the conversion font-by-font using either cfftot1 or fontforge; the appropriate internal names and filenames are as specified in libertine.map. The pfb files are installed into the texmf tree in the following sub-directory:

```
fonts/type1/public/libertine/
```

### D.3.3 The fd Files

The autoinst script generates a large number of files with .fd extensions in the tex/latex/libertine/ directory. Recent versions will generate “silent substitution” rules for mapping sl to it and bx to b; if not, these have to be added by hand.

---

<sup>1</sup>Currently, all of the OpenType fonts except the Keyboard font are supported for  $\text{\LaTeX}$  and  $\text{\pdf\LaTeX}$ .

### D.3.4 The sty Files

The autoinst script generates files with .sty extensions in the tex/latex/libertine/ directory for each of the font families; but these are useless for x<sub>e</sub>LaTeX and luaLaTeX users and have been deleted. A libertine.sty file has been generated “by hand” and is discussed in Section D.4.

## D.4 libertine.sty

This file implements the support for both Type 1 and OpenType usage; the choice is initially determined by the processing engine, but as some x<sub>e</sub>LaTeX and luaLaTeX users may prefer to avoid fontspec, a type1 (or nofontspec) option is provided to change this.

The ...@scale commands are invoked in the fd files or when specifying fonts with fontspec; only the scale factors for Biolinum and Libertine Mono are adjustable using option parameters.

If the sfdefault option has been used, the \familydefault is set to the *current* value of \sfdefault (with no change to \rmdefault).

The use of \newfontfamily rather than \addfontfeatures avoids problems in the implementation of the latter for some fonts (including, unfortunately, Libertine).

For the Mono and Keyboard font families, the Ligature and SmallCap features must be turned off.

Commands to switch locally to oldstyle/lining/proportional/tabular numbers are defined; the definitions of \oldstylenums must deal with possible pre-existing definitions.

To implement the \...Glyph commands, it is necessary to, essentially, iterate through all the *defined* glyphs in the relevant OpenType font. This is implemented by creating files LinLibertine\_R.tex, \LinBiolinum\_R.tex, LinBiolinum\_K.tex and LinLibertine\_I.tex which declare the glyph name (when available), unicode code point, and glyph index for every defined glyph. These files are created by using fontforge to generate a “glyph map” file (extension .g2n) for the relevant font and then the small C program doc/fonts/libertine/g2ntotex.c will convert this into the required .tex file.

The final step in libertine.sty is to remove all default font features in fontspec in case other fonts will be activated by the user.

## D.5 Additional sty Files

The tex/latex/libertine/ directory also contains three “front-end” files libertineotf.sty, libertine-type1.sty, and biolinum-type1.sty, which provide partial compatibility with obsolete packages, primarily for legacy documents.