Libertinus and diacritics

Anchor model

Libertinus has an anchor model where the base anchors are generally where the mark would be placed relative to the base. See the blue dots in the left panel of Figure 1; from top to bottom, the above-anchor is the blue dot above base glyph, the overlay-anchor is blue dot inside the base glyph outline, and the below-anchor is the blue dot below the base glyph. The mark anchor is generally near the optical center of the mark glyph outline. See the red square in the middle panel of Figure 1; the mark's below-anchor is at the optical center of the mark. The base and mark are combined in the right panel of Figure 2 by superimposing their below-anchors.

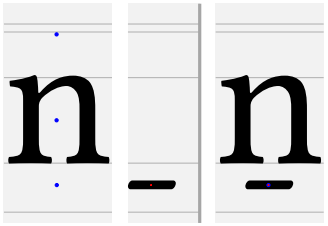


Figure 1: Libertinus n and macron with anchors.

Other fonts use a different geometric model for anchors. In Noto, the base's below-anchor is at the baseline, the overlay-anchor is inside the glyph, and the above-anchor is at the x-height. See the blue dots in the left panel of Figure 2; from the bottom to the top, the mark's below-anchor is the blue dot on the baseline, the overlay-anchor is blue dot inside the base glyph outline, and the above-anchor is the blue dot at the x-height. In Noto, the mark's below-anchor is above the mark glyph. In the middle panel of Figure 2, the mark's below-anchor is the red square, above the mark. The base and mark are combined in the right panel of Figure 2 by superimposing their below-anchors.

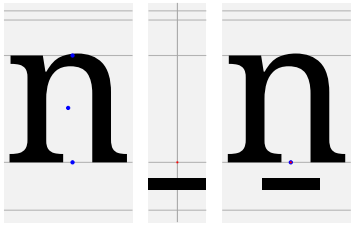


Figure 2: Noto n and macron with anchors.

Regular, above-anchors and below-anchors

See above- and below-anchor coordinates for A–Z and a–z for Libertinus serif regular in Table 1.

Table 1: (X, Y) coordinates of above-anchor (rows 1 and 2) and below-anchor (rows 3 and 4) for A–Z and a–z in Libertinus serif regular.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
354	267	340	306	281	284	365	361	150	182	336	151	431	346	335	277	348	269	232	307	346	336	450	332	295	320
850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850
308	268	363	309	287	209	367	362	147	109	342	262	393	348	350	240		258	234	300	328	318	479	307	295	287
−110	−110	−110	−110	−110	−110	−110	−110	−110	−319	−110	−110	−110	−110	−110	−110		−110	−110	−110	−110	−110	−110	−110	−110	−110
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
209		242	218	243		231	299	137		306	135	392	264	238	271	238	191	206		255	256	345	256	262	220
645		645	645	645		645	645	795		784	885	645	646	645	646	645	646	645		646	646	645	646	645	646
196	234	236	221	234	132	229	272	136	109	290	135	408	265	243	179	348	135	196	163	239	241	352	224	242	207
−110	−110	−110	−110	−110	−110	−319	−110	−110	−319	−214	−110	−110	−110	−110	−319	−319	−110	−110	−110	−110	−110	−110	−110	−319	−110

A few bases are missing anchors. The Y coordinates (rows 2 and 4) of base anchors can be set geometrically, relative to a few vertical aspects – descender height, baseline, x-height, ascender height, cap height – the gray horizontal lines of Figure 1 of the font. The X coordinates (rows 1 and 3) of base anchors are better set optically, by judging the optical weight of the top or bottom of the glyph outline, as well as the glyph width.

Patch J and Q regular, below-anchor

J's below-anchor is too low. In Table 1, the Y coordinate of the below-anchor of J is the same as that of the lowercase letters with descenders. But the descender of J is not as low as that of j, p, q etc. Look at the J column in the grid labeled regular, Latin, below, which is later in this document. The below-marks are set with too much clearance below J.

Q has no below-anchor (Table 1). By harfbuzz fallback shaping (in the absence of anchors), a below-marks will be place below the baseline, without considering descenders. Look at the J column in the grid labeled regular, Latin, below, which is later in this document. All the below-marks crash into Q's descender.

Let's analyze the below-anchors in order to set the below-anchor for J and Q. The below clearance is clearly 110 units on the Y axis, as can be seen from the below-anchor Y coordinate of the letters that sit on the baseline. What should the below-anchor Y coordinate be for J and Q? For the Y coordinate, the lower bound of the J bounding box is at $Y = -172$. So, the below-anchor Y coordinate of J should arguably be $Y = -172 - 110 = -282$. But the designer set it at $Y = -319$, which is too low. For the Y coordinate, the lower bound of the Q bounding box is at $Y = -209$. So, the below-anchor Y coordinate of Q should arguably be $Y = -209 - 110 = -319$. But the J and Q have curves at the bottoms of their descenders, and to account for overshoot, the anchor should be moved up by a few units. But what is the proper overshoot correction? The O has a baseline overshoot of 10 units. So, the below-anchor Y coordinate of J should really be $Y = -282 + 10 = -272$, and the below-anchor Y coordinate of Q should really be $Y = -319 + 10 = -309$.

Now, let's decide below-anchor X coordinate of Q. The Q and O are drawn with the same main oval outline coordinates. So, the below-anchor X coordinate of Q should the same as that for O, which is $X = 350$.

That is, the below-anchor of J should be $(109, -272)$, and the below-anchor of Q should be $(350, -309)$. Here is this positioning of J and Q in a patched version of the font (woth O and X for comparison only).

Original: X̱J̱Q̱O

Patched: X̱J̱Q̱O

But there is no sane reason to put a below-mark on J or Q, so this is not really a problem at all.

Patch k regular, below-anchor, Y coordinate

The below-anchor of k, regular, is at $Y = -214$. But it should be at $Y = -110$, like all other letters that sit on the baseline. That is, the below-anchor of k should be $(109, -110)$.

Here is this positioning of k in a patched version of the font (with o for comparison only).

Original: k̲ k̲o ok̲

Patched: k̲ k̲o ok̲

But there is no sane reason to put a below-mark on k, other than perhaps dot (which is a precomposed character), so this is not really a problem at all.

Above anchor, a–z regular

b, f, j, and t are missing the above-anchor. d and h have an above-anchor above the meanline but not above the ascender. l has an above-anchor above the ascender. k has an above-anchor, but it is just below the ascender, so any marks other than the do crash into the ascender. These are all legitimate design choices. There are no above-marks, other than those with precomposed characters, the would ever be combined with b, f, or t.

Patch j dot removal for three above-marks

The dot of i and j should be removed before adding any above-mark. But the dot is not removed for three above-marks: x, turned tilde, double macron. So the GSUB table should be patched to fir the dotless j substitution in this context.

To do.

Capital mark alternates

Libertinus has custom glyphs for some marks (acute, grave, cicrumflex, breve, a.o.) that are designed better for capital letters. These alternates are flatter. GSUB lookups 23 and 24 implement the substitution. This substitution is not fired on some capital consonants (T, V, W, X) because these marks are not expected on these bases.

Libertinus has custom glyphs for some marks that are designed better for superscripts. These alternates are smaller. Regrettably?, no GSUB table implements their substitution.

Regular, above-anchor, capitals, X coordinate

Figure 3 (left panel) shows pairs of bases aligned at their above-anchor. If a capital letter has a bad X coordinate for its above-anchor, then it will look always off, right or left, in its black column relative to the gray letters that it overlays. Note that the above-anchor X coordinate is not in the geometric (horizontal) center of the glyph, by design. The above-anchor X coordinate is always off center by a few UPM units, sometimes left and sometimes right. But it very hard to discern a few UPM units. See the right panel of Figure 3 for an illustration of increasingly bad (spoofed) X coordinates of N's above-anchor.

Note that the above-anchor of L is above the major (vertical) stem of the L. For E, F, P and R, the above-anchor is optically centered above the glyph, not above the major stem.

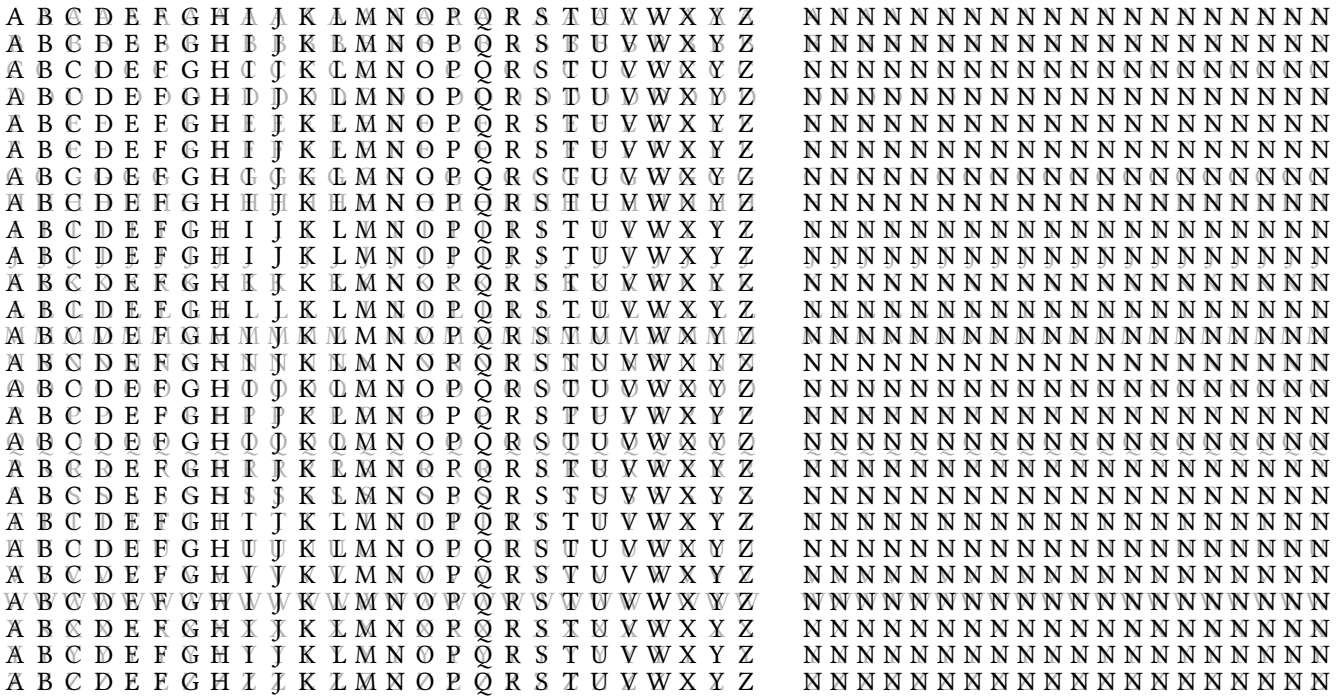


Figure 3: Above-anchor X coordinate alignment. In the left panel, the 26×26 grid shows letters A–Z aligned at the their above-anchor. The right panel shows how hard it is to discern bad X coordinates. The right panel shows N aligned with letters at their above-anchor, starting at the first column with N's above-anchor as currently set by the font, and then spoofing increasing bad values for the X coordinate of N's above-anchor, by 5 UPM per column. At the rightmost column, it becomes evident that the (spoofed) X coordinate of N's above-anchor is bad, because in that column the black Ns are too far right of the gray letters below them.

Comma-style marks

Libertinus has a some (precomposed) glyphs for Unicode characters (with code points) where the caron or cedilla has a comma-style shape, instead of a wedge or hook as might be naively expected. But all of these are appropriate for Czech/Slovak orthography (caron or *háček*) or Latvian orthography (cedilla, but really the comma-above mark or *komatiņš*, by a known mistake in Unicode).

Czech/Slovak *háček*

In Czech/Slovak orthography, the d, l, L, n and t may take a reduced caron that may look like a comma, not a wedge. In Libertinus, only the d, L, l, and t have the reduced comma-style caron in their precomposed form, and the n has wedge caron precomposed form.

`\char"010F` ďď **ď** ***ď***

`\char"013D` ĽĽ **Ľ** ***Ľ***

`\char"013E` ľľ **ľ** ***ľ***

`\char"0148` ňň **ň** ***ň***

`\char"0165` ťť **ť** ***ť***

Libertinus even has a custom glyph for a small capital L with a caron, and it is comma-style.

`\textsc{l\char"030C}` ʟ̌

`\textsc{\char"013E}` ʟ̌

Cedilla and Latvian *komatiņš*

Here are all precomposed characters with a cedilla.

`\char"00C7` ÇÇ **Ç** ***Ç***	`\char"00E7` çç **ç** ***ç***
`\char"1E08` ḈḈ **Ḉ** ***Ḉ***	`\char"1E08` ḉḉ **ḉ** ***ḉ***
`\char"1E10` ḌḌ **Ḍ** ***Ḍ***	`\char"1E11` ḍḍ **ḍ** ***ḍ***
`\char"0228` ȨȨ **Ȩ** ***Ȩ***	`\char"0229` ȩȩ **ȩ** ***ȩ***
`\char"1E1C` ḜḜ **Ḝ** ***Ḝ***	`\char"1E1D` ḝḝ **ḝ** ***ḝ***
`\char"0122` ĢĢ **Ģ** ***Ģ***	`\char"0123` ģģ **ģ** ***ģ***
`\char"1E28` ḨḨ **Ḩ** ***Ḩ***	`\char"1E29` ḩḩ **ḩ** ***ḩ***
`\char"0136` ĶĶ **Ķ** ***Ķ***	`\char"0137` ķķ **ķ** ***ķ***
`\char"013B` ĻĻ **Ļ** ***Ļ***	`\char"013C` ļļ **ļ** ***ļ***
`\char"0145` ŅŅ **Ņ** ***Ņ***	`\char"0146` ņņ **ņ** ***ņ***
`\char"0156` ŖŖ **Ŗ** ***Ŗ***	`\char"0157` ŗŗ **ŗ** ***ŗ***
`\char"015E` ŞŞ **Ş** ***Ş***	`\char"015F` şş **ş** ***ş***
`\char"0162` ŢŢ **Ţ** ***Ţ***	`\char"0163` ţţ **ţ** ***ţ***

These characters – Ģ ģ Ķ ķ Ļ ļ Ņ ņ Ŗ ŗ – use the Latvian *komatiņš* which is proper for Latvian orthography, but the result of a historical mistake in Unicode naming.

The Unicode characters of D and d with cedilla exist for scholarly and historical reasons, not Latvian orthography. Fonts design these Unicode characters differently. Libertinus designs them inconsistently: comma-style in regular and italic, and hook-style in (semi)bold and (semi)bold italic. I think the cedilla on a D or d should be hook-like, but I do not really know.

The other characters – c, e, h, s, t – with a cedilla should definitely be hook-like, and they are so in Libertinus.

Somewhat mysteriously, if the LaTeX source tries to combine any of these letters – c, d, e, g, h, k, l, n, r, s, t – with the combining cedilla, U+0327, then the precomposed character is produced.

`c\char"0327` ç *ç* **ç** ***ç***
`d\char"0327` ḑ *ḑ* **ḑ** ***ḑ***
`e\char"0327` ȩ *ȩ* **ȩ** ***ȩ***
`g\char"0327` ģ *ģ* **ģ** ***ģ***
`h\char"0327` ḫ *ḫ* **ḫ** ***ḫ***
`k\char"0327` ķ *ķ* **ķ** ***ķ***
`l\char"0327` ļ *ļ* **ļ** ***ļ***
`n\char"0327` ņ *ņ* **ņ** ***ņ***
`r\char"0327` ŗ *ŗ* **ŗ** ***ŗ***
`s\char"0327` ş *ş* **ş** ***ş***
`t\char"0327` ţ *ţ* **ţ** ***ţ***
This behavior does not make sense for the Latvian *komatiņš* bases – g, k, l, n, r – because any person trying to produce Latvian g with *komatiņš* would not try `g\char"0327` or `\c{g}`.
This behavior is tolerable for the other bases – c, d, e, h, s, t.

IJ

The ij and IJ ligatures are Unicode characters (with code points) and are supported by Libertinus.
IJ `\char"0132` U+0132 capital ligature IJ
ij `\char"0133` U+0133 small ligature ij
Libertinus has custom glyphs for these ligatures with an acute, and the small capital ligature with an acute. The GSUB table that activates these custom glyphs only works when the language is set to Dutch by a font loading command. For example,
`\newfontfamily\SerifRegularDutch[Language = Dutch]{LibertinusSerif-Regular.otf}`
Ĳ́ `{\SerifRegularDutch \char"0132\char"0301}` Dutch capital ligature IJ with acute
ĳ́ `{\SerifRegularDutch \char"0133\char"0301}` Dutch small ligature ij with acute
ĳ́ `{\SerifRegularDutch \textsc{\char"0133\char"0301}}` Dutch small capital ligature IJ with acute
In an English LaTeX document, `ij` and `IJ` are kerned by the GPOS table to produce ij and IJ, so they look close together, but they are not substituted by the single glyph for the ligature.

f with dot below

tiɣə́ r̤fa
tiɣə́ r̤fa
tiɣə́ r̤fa
tiɣə́ r̤fa
r̤ = `\char"1E5B` is the precomposed character U+1E5B Latin small letter r with dot below.
f̤ = `f\char"0323` is f with U+0323 combining dot below.
Here are some letters with a dot below.
ạ ḅ ḍ ẹ ḥ ị ḳ ḷ ṃ ṇ ọ ṛ ṣ ṭ ụ ṿ ẉ ỵ ẓ ç f̤ g̤ j̤ p̤ q̤ x̤

ạ ḅ ḍ ẹ ḥ ị ḳ ḷ ṃ ṇ ọ ṛ ṣ ṭ ụ ṿ ẉ ỵ ẓ ç f g̣ j̣ p̣ q̣ x̣
ạ ḅ ḍ ẹ ḥ ị ḳ ḷ ṃ ṇ ọ ṛ ṣ ṭ ụ ṿ ẉ ỵ ẓ ç f g̣ j̣ p̣ q̣ x̣
ạ ḅ ḍ ẹ ḥ ị ḳ ḷ ṃ ṇ ọ ṛ ṣ ṭ ụ ṿ ẉ ỵ ẓ ç f g̣ j̣ p̣ q̣ x̣

The left group of letters – a b d e h i k l m n o r s t u v w y z – have a precomposed character. For the right group of letters – c f g j p q x – the dot is placed according to the below-anchor (if the below-anchor is defined for the letter) or by harfbuzz fallback shaping (placing the dot below the baseline, regardless of the letter's bounding box).

In all styles – regular, italic, semibold, and semibold italic – the precomposed glyph of y with dot below places the dot beside the descender, even though the y has a below-anchor below the descender.

Do the letters c, f, g, j, p, q, and x have good below-anchors? In regular, the below-anchor of all these combining bases is below the glyph outline (good). In italic, the below-anchor of f, p, and q is beside the descender (bad), the below-anchor of g and j is below the descender (good), and the below-anchor of c and x is below the baseline (good). In semibold, the below-anchor of g and j is below the descender (good), but the other bases – c, f, p, q – have no below-anchor, and harfbuzz fallback positioning places the combining dot below the baseline, not below the bounding box; for c, f and x this is good, but for p and q this is bad, because of the descenders. In semibold italic, the below-anchor of c, g, j, p and q is below the glyph outline (good), the below-anchor of f is inside the descender (very bad), and x has no below-anchor but harfbuzz fallback positioning places the combining dot below the baseline (good).

Which dots are used in precomposed characters and how big are the dots? In all styles (except semibold italic), the precomposed characters reference the dot of `uni0307`, combining dot above, U+0307, and take care to translate this above-mark to a position below the letter outline, except for m, which references `dotbelowcomb`, combining dot below, U+0323. In semibold italic, `dotaccent` is used instead of `uni0307`. These two dots are four-point Bézier circles (in regular and semibold, but ovals in italic and semibold italic), but of different diameter. In regular, `uni0307` has diameter 100, and `dotbelowcomb` has diameter 108. That is, the precomposed characters (except m) use a smaller dot, and the non-precomposed letters (and m) take a bigger dot. In semibold, the size difference is reversed: `uni0307` has larger diameter 124, and `dotbelowcomb` has small diameter 108. Actually, semibold `dotbelowcomb` is not a Bézier circle – the horizontal span is 109, and the vertical span is 108. In semibold italic, `dotaccent` is a skewed four-point Bézier oval – the horizontal and vertical spans are 120, offset by $(\pm 6, \pm 7.5)$ from the center — and `dotbelowcomb` is slightly larger, slightly flatter skewed six-point Bézier oval – horizontal span is 122 and the vertical span is 120. So, in semibold italic the two dots in precomposed and combining form are closest in size. Recall that f has a bad below-anchor, inside the descender, but g, j, p and q have a good below-anchor, below the glyph outline.

So, in order to solve the problem of the bad dot below f in italic, I need to decide the scope of the badness to correct. The simplest patch is move the below-anchor in italic and semibold italic below the descender. But this does not solve inconsistent below dot size across styles and letters. In italic and semibold italic, g and j have a (good) below-anchor at $Y = -319$, so that is also good Y coordinate for f's below-anchor.

I asked Copilot/GPT-5.1 to calculate a good X coordinate for f's below-anchor in italic and semibold italic, taking into account the U-pocket of f's descender and the below-anchor of `dotbelowcomb`. I decided that this U-pocket strategy was appropriate after testing other strategies that accounted for the slant of onf the major stroke. Here is a reasonbly faithful summary of the calculations and reasoning by Copilot/GPT-5.1.

> For italic, the descender's U-pocket is defined by the control points at $(14, -238)$ and $(33, -205)$, giving a U-center around $x \approx 24$. Using the (symmetric) italic `dotbelowcomb` anchor as the dot's optical center, the dot should sit under this U-pocket, not under the ball or the stem. A balanced, U-centered, slightly inner-biased choice is $X \approx 30$.
>
> For semibold italic, the U-pocket of the semibold italic descender is wider and more asymmetric, with a geometric U-center of $X = -33.5$. The semibold italic `dotbelowcomb` itself is also skewed, with its anchor already shifted relative to its mass. In practice, the visually correct position for the dot below f is under the open side of the U-pocket, clearly right of the ball and closer the right of the stem. The anchor candidate is $X \approx 62$.

Here are examples with the patched fonts, with f's below-anchor in italic at $(30, -319)$ and semibold italic at $(62, -319)$. This does not solve the problem of inconsistent dot size below letters, and I did not touch p, q, or y.

Original	Patched italics (f only)
tiɣə ṛfa	tiɣə ṛfa
tiɣə ṛfa	*tiɣə ṛfa*
tiɣə ṛfa	**tiɣə ṛfa**
tiɣə ṛfa	***tiɣə ṛfa***

Original (repeated from above)

ạ ḅ ḍ ẹ ḥ ị ḳ ḷ ṃ ṇ ọ ṛ ṣ ṭ ụ ṿ ẉ ỵ ẓ ç f̧ g̦ j̦ p̦ q̣ x̣

ạ ḅ ḍ ẹ ḥ ị ḳ ḷ ṃ ṇ ọ ṛ ṣ ṭ ụ ṿ ẉ ỵ ẓ ç f̧ g̦ j̦ p̦ q̣ x̣

ạ ḅ ḍ ẹ ḥ ị ḳ ḷ ṃ ṇ ọ ṛ ṣ ṭ ụ ṿ ẉ ỵ ẓ ç f̧ g̦ j̦ p̦ q̣ x̣

ạ ḅ ḍ ẹ ḥ ị ḳ ḷ ṃ ṇ ọ ṛ ṣ ṭ ụ ṿ ẉ ỵ ẓ ç f̧ g̦ j̦ p̦ q̣ x̣

Patched italics (f only)

ạ ḅ ḍ ẹ ḥ ị ḳ ḷ ṃ ṇ ọ ṛ ṣ ṭ ụ ṿ ẉ ỵ ẓ ç f̧ g̦ j̦ p̦ q̣ x̣

ạ ḅ ḍ ẹ ḥ ị ḳ ḷ ṃ ṇ ọ ṛ ṣ ṭ ụ ṿ ẉ ỵ ẓ ç f̧ g̦ j̦ p̦ q̣ x̣

Marks

Above marks – GPOS anchor 0

x̀ x́ x̂ x̃ x̄ x̆ ẋ ẍ x̉ x̊ x̋ x̌ x̍ x̎ x̏ x̐ x̑ x̒ x̓ x̔ x̕ x̿ x̀ x́ x̂ x̃ x̄ x̆ ẋ ẍ x̉ x̊ x̋ x̌ x̍ x̎ x̏ x̐ x̑ x̒ x̓ x̔ x̕ x̿
x̀ x́ x̂ x̃ x̄ x̆ ẋ ẍ x̉ x̊ x̋ x̌ x̍ x̎ x̏ x̐ x̑ x̒ x̓ x̔ x̕ x̿ x̀ x́ x̂ x̃ x̄ x̆ ẋ ẍ x̉ x̊ x̋ x̌ x̍ x̎ x̏ x̐ x̑ x̒ x̓ x̔ x̕ x̿
x̀ x́ x̂ x̃ x̄ x̆ ẋ ẍ x̉ x̊ x̋ x̌ x̍ x̎ x̏ x̐ x̑ x̒ x̓ x̔ x̕ x̿ x̀ x́ x̂ x̃ x̄ x̆ ẋ ẍ x̉ x̊ x̋ x̌ x̍ x̎ x̏ x̐ x̑ x̒ x̓ x̔ x̕ x̿
x̀ x́ x̂ x̃ x̄ x̆ ẋ ẍ x̉ x̊ x̋ x̌ x̍ x̎ x̏ x̐ x̑ x̒ x̓ x̔ x̕ x̿ x̀ x́ x̂ x̃ x̄ x̆ ẋ ẍ x̉ x̊ x̋ x̌ x̍ x̎ x̏ x̐ x̑ x̒ x̓ x̔ x̕ x̿

Below marks – GPOS anchor 2

x̖ x̗ x̘ x̙ x̚ x̛ x̜ x̝ x̞ x̟ x̠ x̡ x̢ x̣ x̤ x̥ x̦ x̧ x̨ x̩ x̪ x̫ x̬ x̭ x̮ x̯ x̰ x̱ x̲ x̳ x̖ x̗ x̘ x̙ x̚ x̛ x̜ x̝ x̞ x̟ x̠ x̡ x̢ x̣ x̤ x̥ x̦ x̧ x̨ x̩ x̪ x̫ x̬ x̭ x̮ x̯ x̰ x̱ x̲ x̳
x̖ x̗ x̘ x̙ x̚ x̛ x̜ x̝ x̞ x̟ x̠ x̡ x̢ x̣ x̤ x̥ x̦ x̧ x̨ x̩ x̪ x̫ x̬ x̭ x̮ x̯ x̰ x̱ x̲ x̳ x̖ x̗ x̘ x̙ x̚ x̛ x̜ x̝ x̞ x̟ x̠ x̡ x̢ x̣ x̤ x̥ x̦ x̧ x̨ x̩ x̪ x̫ x̬ x̭ x̮ x̯ x̰ x̱ x̲ x̳
x̖ x̗ x̘ x̙ x̚ x̛ x̜ x̝ x̞ x̟ x̠ x̡ x̢ x̣ x̤ x̥ x̦ x̧ x̨ x̩ x̪ x̫ x̬ x̭ x̮ x̯ x̰ x̱ x̲ x̳ x̖ x̗ x̘ x̙ x̚ x̛ x̜ x̝ x̞ x̟ x̠ x̡ x̢ x̣ x̤ x̥ x̦ x̧ x̨ x̩ x̪ x̫ x̬ x̭ x̮ x̯ x̰ x̱ x̲ x̳
x̖ x̗ x̘ x̙ x̚ x̛ x̜ x̝ x̞ x̟ x̠ x̡ x̢ x̣ x̤ x̥ x̦ x̧ x̨ x̩ x̪ x̫ x̬ x̭ x̮ x̯ x̰ x̱ x̲ x̳ x̖ x̗ x̘ x̙ x̚ x̛ x̜ x̝ x̞ x̟ x̠ x̡ x̢ x̣ x̤ x̥ x̦ x̧ x̨ x̩ x̪ x̫ x̬ x̭ x̮ x̯ x̰ x̱ x̲ x̳

Left angle – GPOS anchor 3

x᳐ x᳑ x᳒ x᳓

Below-right marks – GPOS anchor 4

x᳔ x᳕ x᳖
x᳔ x᳕ x᳖
x᳔ x᳕ x᳖
x᳔ x᳕ x᳖

Cedilla – GPOS anchor 5

x̡ x̧ x̨ x̡

Overlay marks – GPOS anchor 6

o̶ o̷ o̸ o̵ o̴
o̶ o̷ o̸ o̵ o̴
o̶ o̷ o̸ o̵ o̴
o̶ o̷ o̸ o̵ o̴

Double marks

x͡x x͡x x̄x x̲x x̃x x̂x x̱x

x͡x x͡x x̄x x̲x x̃x x̂x x̱x

x̆x x̋x x̊x x̂x x̆x x̊x ẍx

x⃞x x⃞x x⃞x x⃞x x⃞x x⃞x x⃞x x⃞x

Overline and low line

O+0305 combining overline and U+0332 combining low line are applied by GSUB lookups that substitute a custom-width line mark according to width classes. GSUB lookup 51 effectively classifies the glyphs by width, and GSUB lookups 52–82 provide the appropriate custom-width mark for the base width class. Semibold and semibold italic do not have any combining low lines. Custom-width line marks do not have anchors. They are positioned by harfbuzz fallback shaping. The overlines are above the ascender line, so they are above all bases. The low lines are below the baseline, but above the descender line, and so they cut though any descenders. If a new glyph is added, and you want to support custom-width line marks for it, then remember to classify the new glyph in GSUB lookup 51.

Above-right marks – GPOS anchor 1

Libertinus has three combining marks with GPOS anchor 1 – U+031B horn, U+0315 comma above right, and U+0358 dot above right.

A few bases in Libertinus have this anchor (anchor 1), but none that possibly need it.

Horn

The Vietnamese alphabet has two horn vowels – Ơơ Ưư– and these vowels may take tonal marks. All these combinations are Unicode characters (with code points).

Ờờ Ớớ Ở ở Ỡỡ Ợợ Ừừ Ứứ Ử ử Ữữ Ự ự

Ờờ Ớớ Ở ở Ỡỡ Ợợ Ừừ Ứứ Ử ử Ữữ Ự ự

Ờờ Ớớ Ở ở Ỡỡ Ợợ Ừừ Ứứ Ử ử Ữữ Ự ự

Ờờ Ớớ Ở ở Ỡỡ Ợợ Ừừ Ứứ Ử ử Ữữ Ự ự

There is a Unicode character for the combining horn mark: ̛ `\char"031B` U+031B, but this is not used in practice. The Vietnamese vowels are usually entered in a LaTeX document as Unicode characters, also with `\usepackage[vietnamese]{babel}` for hyphenation and spacing.

Comma above right

There is a Unicode character for the combining comma above right mark: ̕ `\char"0315` U+0315.

U+0315 (comma above right) is used in rare cases when another comma-like mark does not fit.

In IPA, the glottalization diacritic mark uses U+0313 (comma above) as a combining mark. But when a glottalization mark is needed for a superscript consonant (1) or superscript consonant cluster (2), then the combining mark U+0315 (comma above right) is used instead, because its positioning is hopefully better than that of U+0313.

(1) *k̕wkt* [k̕^{wkx}t] ‘to scrape’ (Nuxalk)

(2) *p’ak* [p’^{kx}ak] ‘he/she cut it’ (Upper Chehalis)

In (1), the superscript consonant cluster is ^{wkx} and it is glottalized. In (2), the superscript consonant ^{x} is glottalized.

Because U+0315 is being used in superscript position on a smaller sized glyph, U+0315 should probably be smaller than U+0313, but it is not so in Libertinus.

Dot above right

There is a Unicode character for the combining dot above right mark: ̙ `\char"0358` U+0358 dot above right

U+0358 should be a small, above-right dot, used to mark palatalization or similar secondary articulations on superscript consonants, created for the same typographic reason U+0315 exists – the standard palatalization diacritic (U+0307, dot above) is too big and too high.

In Libertinus, U+0358 is a 104-diameter Bezier circle, and U+0307 is a smaller Bezier oval, inverting the desired size difference.

There are only a few IPA superscript letters that may serve as the possible host of U+0315 or U+0358 on superscript consonants or on superscript consonant clusters. In Libertinus, regrettably none of these characters has the anchor (anchor 1), so the mark (U+0315 and U+0358) is positioned by harfbuzz fallback shaping, which seems to place the mark at the right boundary of the glyph at a constant vertical aspect (effectively at the superscript x-height).

These IPA marks U+0315 and U+0358 should only be used in regular (not italic and not semibold). Regrettably, in Libertinus serif semibold, U+0358 looks like a grave, not a dot, and there is no U+0358 glyph in Libertinus serif semibold italic.

ʰ ʱ ʲ ʳ ʴ ʵ ʷ ʸ ʸ̀ ˢ ˣ ˀ ᵇ ᵏ ᵐ ᵖ ᵗ ᵚ ᵛ ᵝ ᵝ̙ ᵞ ᵟ

ʰ ʱ ʲ ʳ ʴ ʵ ʷ ʸ ʸ̀ ˢ ˣ ˀ ᵇ ᵏ ᵐ ᵖ ᵗ ᵚ ᵛ ᵝ ᵝ̙ ᵞ ᵟ

h ɦ j r ɹ ɻ ʁ w y ɣ l s x ʕ b k m p t ɯ v☒☒☒☒

h ɦ j r ɹ ɻ ʁ w y ɣ l s x ʕ b k m p t ɯ v☒ ☒ ☒ ☒

h ɦ j r ɹ ɻ ʁ w y ɣ l s x ʕ b k m p t ɯ v ☒ ☒ ☒ ☒

h ɦ j r ɹ ɻ ʁ w y ɣ l s x ʕ b k m p t ɯ v ☒ ☒ ☒ ☒

h ɦ j r ɹ ɻ ʁ w y ɣ l s x ʕ b k m p t ɯ v☒ ☒ ☒ ☒

h ɦ j r ɹ ɻ ʁ w y ɣ l s x ʕ b k m p t ɯ v☒ ☒ ☒ ☒

There are three comma/apostrophe glyphs that could possibly mark glottalization: U+0313 combining comma above, U+0315 combining comma above right, and U+02BC modifier letter apostrophe. In Libertinus, U+0315 has the worst appearance, even though U+0315 is intended for superscript letters. In Gentium Plus (SIL Global), U+0315 is tightly above-right the superscript letter, as expected.

Libertinus

`[k\char"0313\char"02B7\char"1D4F\char"02E3\char"0313 t]` [k̓ʷᵏˣ̓t]

`[k\char"0313\char"02B7\char"1D4F\char"02E3\char"0315 t]` [k̓ʷᵏˣ̕t]

`[k\char"0313\char"02B7\char"1D4F\char"02E3\char"02BC t]` [k̓ʷᵏˣʼt]

Gentium Plus

`[k\char"0313\char"02B7\char"1D4F\char"02E3\char"0313 t]` [k̓ʷᵏˣ̓t]

`[k\char"0313\char"02B7\char"1D4F\char"02E3\char"0315 t]` [k̓ʷᵏˣ̕t]

`[k\char"0313\char"02B7\char"1D4F\char"02E3\char"02BC t]` [k̓ʷᵏˣʼt]

I patched Libertinus to add anchors to those IPA superscript letters to support U+0315.

Patched Libertinus, selected IPA superscript letters with U+0315 and U+0358

h̕ɦ̕j̕r̕ɹ̕ɻ̕ʁ̕w̕y̕ɣ̕l̕s̕x̕ʕ̕b̕k̕m̕p̕t̕ɯ̕v̕ᵜ̕β̕γ̕δ̕

h͘ɦ͘j͘r͘ɹ͘ɻ͘ʁ͘w͘y͘ɣ͘l͘s͘x͘ʕ͘b͘k͘m͘p͘t͘ɯ͘v͘ᵜ͘β͘γ͘δ͘

`[k\char"0313\char"02B7\char"1D4F\char"02E3\char"0315 t]` [k̓ʷᵏˣ̕t]

Gentium Plus, selected IPA superscript letters with U+0315 and U+0358

h̕ ɦ̕ j̕ r̕ ɹ̕ ɻ̕ ʁ̕ w̕ y̕ ɣ̕ l̕ s̕ x̕ ʕ̕ b̕ k̕ m̕ p̕ t̕ ɯ̕ v̕ ᵜ̕ β̕ γ̕ δ̕

h͘ ɦ͘ j͘ r͘ ɹ͘ ɻ͘ ʁ͘ w͘ y͘ ɣ͘ l͘ s͘ x͘ ʕ͘ b͘ k͘ m͘ p͘ t͘ ɯ͘ v͘ ᵜ͘ β͘ γ͘ δ͘

`[k\char"0313\char"02B7\char"1D4F\char"02E3\char"0315 t]` [k̓ʷᵏˣ̕t]

Here are the IPA superscript letters considered and their new anchor (anchor 1).

U+02B0: (347, 648), U+02B1: (339, 648), U+02B2: (193, 648), U+02B3: (284, 648), U+02B4: (274, 648), U+02B5: (319, 648), U+02B6: (308, 648), U+02B7: (497, 648), U+02B8: (368, 648), U+02E0: (341, 648), U+02E1: (193, 648), U+02E2: (270, 648), U+02E3: (344, 648), U+02E4: (282, 648), U+1D47: (319, 648), U+1D4F: (353, 648), U+1D50: (533, 648), U+1D56: (334, 648), U+1D57: (241, 648), U+1D5A: (525, 648), U+1D5B: (354, 648), U+1D5C: (508, 648), U+1D5D: (335, 648), U+1D5E: (372, 648), U+1D5F: (353, 648)

I did not change the anchor-1 of U+315 and U+0358. U+0358 has its anchor at the xMin and yMin of its bounding box. But U+0315 already has some clearance built in to its anchor: its anchor is 62 units below its yMin, but 25 units right of it xMin. So, I decided to provide x-clearance of 12 units and y-clearance of 80 units from the bases. All these IPA superscript letters already have a superscript meanline at $Y = 630$. So their anchor will be at $Y = 630 - 62 + 80 = 648$. The X coordinate depends on their bounding box and its xMax. To provide the desired clearance of 12 units, the anchor is at $X = \text{xMax} + 26 + 12$. These anchor coordinate values were optimized for U+0315 but they work fine for U+0358.

Bases

Latin

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z a b c d e f g h i j k l m n o p q r s t u v w x y z Æ æ Œ œ Ø ø Ð ð Þ þ ß ſ Đ đ Ħ ħ ı ȷ Ł ł Ɓ Б

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z a b c d e f g h i j k l m n o p q r s t u v w x y z Æ æ Œ œ Ø ø Ð ð Þ þ ß ſ Đ đ Ħ ħ ı ȷ Ł ł Ɓ Б

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z a b c d e f g h i j k l m n o p q r s t u v w x y z Æ æ Œ œ Ø ø Ð ð Þ þ ß ſ Đ đ Ħ ħ ı ȷ Ł ł Ɓ Б

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z a b c d e f g h i j k l m n o p q r s t u v w x y z Æ æ Œ œ Ø ø Ð ð Þ þ ß ſ Đ đ Ħ ħ ı ȷ Ł ł Ɓ Б

IPA

ƀƆƇƉƊƋƍƎƏƐƑƒƓƔƕƖƗƘƜƝƟƪƷƻǀǁǂǃɐɑɒɓɔɕɖɗɘəɚɛɜɝɞɟɠɡɢɣɤɥɦɧɨɩɪɫɬɭɮɯɰɱɲɳɴɵɶɷɸɹɺɻɼɽɾɿʀʁʂʃʄʅʆʇʈʉʊʋʌʍʎʏʐʑʒʓʔʕʖʗʘʙʚʛʜʝʞʟȣ

ƀƆƇƉƊƋƍƎƏƐƑƒƓƔƕƖƗƘƜƝƟƪƷƻǀǁǂǃɐɑɒɓɔɕɖɗɘəɚɛɜɝɞɟɠɡɢɣɤɥɦɧɨɩɪɫɬɭɮɯɰɱɲɳɴɵɶɷɸɹɺɻɼɽɾɿʀʁʂʃʄʅʆʇʈʉʊʋʌʍʎʏʐʑʒʓʔʕʖʗʘʙʚʛʜʝʞʟ⊠

ƀƆƇƉƊƋƍƎƏƐƑƒƓƔƕƖƗƘƜƝƟƪƷƻǀǁǂǃɐɑɒɓɔɕɖɗɘəɚɛɜɝɞɟɠɡɢɣɤɥɦɧɨɩɪɫɬɭɮɯɰɱɲɳɴɵɶɷɸɹɺɻɼɽɾɿʀʁʂʃʄʅʆʇʈʉʊʋʌʍʎʏʐʑʒʓʔʕʖʗʘʙʚʛʜʝʞʟ⊠

ƀƆƇƉƊƋƍƎƏƐƑƒƓƔƕƖƗƘƜƝƟƪƷƻǀǁǂǃɐɑɒɓɔɕɖɗɘəɚɛɜɝɞɟɠɡɢɣɤɥɦɧɨɩɪɫɬɭɮɯɰɱɲɳɴɵɶɷɸɹɺɻɼɽɾɿʀʁʂʃʄʅʆʇʈʉʊʋʌʍʎʏʐʑʒʓʔʕʖʗʘʙʚʛʜʝʞʟ⊠

Superscript consonants

h ɦ j r ɹ ɻ ʁ w y ɣ l s x ʕ b k m p t ɯ v ᴥ β γ δ

h ɦ j r ɹ ɻ ʁ w y ɣ l s x ʕ b k m p t ɯ v⊠⊠⊠⊠

h ɦ j r ɹ ɻ ʁ w y ɣ l s x ʕ b k m p t ɯ v⊠⊠⊠⊠

h ɦ j r ɹ ɻ ʁ w y ɣ l s x ʕ b k m p t ɯ v⊠⊠⊠⊠

Greek

Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω α β γ δ ε ζ η θ ι κ λ μ ν ξ ο π ρ σ τ υ φ χ ψ ω

Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω α β γ δ ε ζ η θ ι κ λ μ ν ξ ο π ρ σ τ υ φ χ ψ ω

Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω α β γ δ ε ζ η θ ι κ λ μ ν ξ ο π ρ σ τ υ φ χ ψ ω

Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω α β γ δ ε ζ η θ ι κ λ μ ν ξ ο π ρ σ τ υ φ χ ψ ω

Cyrillic

А Б В Г Д Е Ж З И Й К Л М Н О П Р С Т У Ф Х Ц Ч Ш Щ Ъ Ы Ь Э Ю Я а б в г д е ж з и й к л м н о п р с т у ф х ц ч ш щ ъ ы ь э ю я Ё ё Є є Ї ї Ў ў Ә ә Ѳ ѳ Һ һ І

А Б В Г Д Е Ж З И Й К Л М Н О П Р С Т У Ф Х Ц Ч Ш Щ Ъ Ы Ь Э Ю Я а б в г д е ж з и й к л м н о п р с т у ф х ц ч ш щ ъ ы ь э ю я Ё ё Є є Ї ї Ў ў Ә ә Ѳ ѳ Һ һ І

А Б В Г Д Е Ж З И Й К Л М Н О П Р С Т У Ф Х Ц Ч Ш Щ Ъ Ы Ь Э Ю Я а б в г д е ж з и й к л м н о п р с т у ф х ц ч ш щ ъ ы ь э ю я Ё ё Є є Ї ї Ў ў Ә ә Ѳ ѳ Һ һ І

А Б В Г Д Е Ж З И Й К Л М Н О П Р С Т У Ф Х Ц Ч Ш Щ Ъ Ы Ь Э Ю Я а б в г д е ж з и й к л м н о п р с т у ф х ц ч ш щ ъ ы ь э ю я Ё ё Є є Ї ї Ў ў Ә ә Ѳ ѳ Һ һ І

Precomposed capital vowels

ÀÁÂÃÄÅĀĂĄǍǞǠǺȀȂȦḀẠẢẤẦẨẪẬẮẰẲẴẶÈÉÊËĒĔĖĘĚȄȆȨḔḖḘḚẸẺẼẾỀỂỄỆÌÍÎÏĨĪĬĮİǏȈȊḬḮỈỊÒÓÔÕÖŌŎŐǑǪǬȌȎȪȬȮȰỌỎỐỒỔỖỘỚỜỞỠỢÙÚÛÜŨŪŬŮŰǓǕǗǙǛȔȖṲṴṶṸṺỤỦỨỪỬỮỰ

ÀÁÂÃÄÅĀĂĄǍǞǠǺȀȂȦḀẠẢẤẦẨẪẬẮẰẲẴẶÈÉÊËĒĔĖĘĚȄȆȨḔḖḘḚẸẺẼẾỀỂỄỆÌÍÎÏĨĪĬĮİǏȈȊḬḮỈỊÒÓÔÕÖŌŎŐǑǪǬȌȎȪȬȮȰỌỎỐỒỔỖỘỚỜỞỠỢÙÚÛÜŨŪŬŮŰǓǕǗǙǛȔȖṲṴṶṸṺỤỦỨỪỬỮỰ

ÀÁÂÃÄÅĀĂĄǍǞǠǺȀȂȦḀẠẢẤẦẨẪẬẮẰẲẴẶÈÉÊËĒĔĖĘĚȄȆȨḔḖḘḚẸẺẼẾỀỂỄỆÌÍÎÏĨĪĬĮİǏȈȊḬḮỈỊÒÓÔÕÖŌŎŐǑǪǬȌȎȪȬȮȰỌỎỐỒỔỖỘỚỜỞỠỢÙÚÛÜŨŪŬŮŰǓǕǗǙǛȔȖṲṴṶṸṺỤỦỨỪỬỮỰ

ÀÁÂÃÄÅĀĂĄǍǞǠǺȀȂȦḀẠẢẤẦẨẪẬẮẰẲẴẶÈÉÊËĒĔĖĘĚȄȆȨḔḖḘḚẸẺẼẾỀỂỄỆÌÍÎÏĨĪĬĮİǏȈȊḬḮỈỊÒÓÔÕÖŌŎŐǑǪǬȌȎȪȬȮȰỌỎỐỒỔỖỘỚỜỞỠỢÙÚÛÜŨŪŬŮŰǓǕǗǙǛȔȖṲṴṶṸṺỤỦỨỪỬỮỰ

Precomposed small vowels

àáâãäåāăąǎǟǡǻȁȃȧḁạảấầẩẫậắằẳẵặèéêëēĕėęěȅȇȩḕḗḙḛẹẻẽếềểễệìíîïĩīĭįǐȉȋḭḯỉịòóôõöōŏőǒǫǭȍȏȫȭȯȱọỏốồổỗộớờởỡợùúûüũūŭůűǔǖǘǚǜȕȗṳṵṷṹṻụủứừửữự

àáâãäåāăąǎǟǡǻȁȃȧḁạảấầẩẫậắằẳẵặèéêëēĕėęěȅȇȩḕḗḙḛẹẻẽếềểễệìíîïĩīĭįǐȉȋḭḯỉịòóôõöōŏőǒǫǭȍȏȫȭȯȱọỏốồổỗộớờởỡợùúûüũūŭůűǔǖǘǚǜȕȗṳṵṷṹṻụủứừửữự

àáâãäåāăąǎǟǡǻȁȃȧḁạảấầẩẫậắằẳẵặèéêëēĕėęěȅȇȩḕḗḙḛẹẻẽếềểễệìíîïĩīĭįǐȉȋḭḯỉịòóôõöōŏőǒǫǭȍȏȫȭȯȱọỏốồổỗộớờởỡợùúûüũūŭůűǔǖǘǚǜȕȗṳṵṷṹṻụủứừửữự

àáâãäåāăąǎǟǡǻȁȃȧḁạảấầẩẫậắằẳẵặèéêëēĕėęěȅȇȩḕḗḙḛẹẻẽếềểễệìíîïĩīĭįǐȉȋḭḯỉịòóôõöōŏőǒǫǭȍȏȫȭȯȱọỏốồổỗộớờởỡợùúûüũūŭůűǔǖǘǚǜȕȗṳṵṷṹṻụủứừửữự

Precomposed capital consonants

ḂḄÇĆĈĊČḈĎĐḊḌḎḐḒḞĜĞĠĢḠǤǦĤḢḤḦḨḪĴĶḰḲḴǨĹĻĽĿŁḶḸḺḼḾṀṂŃŅŇǸṄṆṈṊƠṔṖƤŔŖŘṘṚṜṞŚŜŞŠṠṢṤṦṨƧŢŤṪṬṮṰƮƯṼṾƱŴẀẂẄẊẌÝŶŸẎỲỴỶỸƳŹŻŽẐẒẔƵ

ḂḄÇĆĈĊČḈĎĐḊḌḎḐḒḞĜĞĠĢḠǤǦĤḢḤḦḨḪĴĶḰḲḴǨĹĻĽĿŁḶḸḺḼḾṀṂŃŅŇǸṄṆṈṊƠṔṖƤŔŖŘṘṚṜṞŚŜŞŠṠṢṤṦṨƧŢŤṪṬṮṰƮƯṼṾƱŴẀẂẄẊẌÝŶŸẎỲỴỶỸƳŹŻŽẐẒẔƵ

ḂḄÇĆĈĊČḈĎĐḊḌḎḐḒḞĜĞĠĢḠǤǦĤḢḤḦḨḪĴĶḰḲḴǨĹĻĽĿŁḶḸḺḼḾṀṂŃŅŇǸṄṆṈṊƠṔṖƤŔŖŘṘṚṜṞŚŜŞŠṠṢṤṦṨƧŢŤṪṬṮṰƮƯṼṾƱŴẀẂẄẊẌÝŶŸẎỲỴỶỸƳŹŻŽẐẒẔƵ

ḂḄÇĆĈĊČḈĎĐḊḌḎḐḒḞĜĞĠĢḠǤǦĤḢḤḦḨḪĴĶḰḲḴǨĹĻĽĿŁḶḸḺḼḾṀṂŃŅŇǸṄṆṈṊƠṔṖƤŔŖŘṘṚṜṞŚŜŞŠṠṢṤṦṨƧŢŤṪṬṮṰƮƯṼṾƱŴẀẂẄẊẌÝŶŸẎỲỴỶỸƳŹŻŽẐẒẔƵ

Precomposed small consonants

ḃḅƀƃçćĉċčḉƈďđḋḍḏḑḓƌḟĝğġģḡǥǧǩĥḣḥḧḩḫĵķḱḳḵƙĺļľŀłḷḹḻḽƚḿṁṃńņňǹṅṇṉṋŋơƣṕṗƥŕŗřṙṛṝṟśŝşšṡṣṥṧṩƨţťṫṭṯṱƭưṽṿŵẁẃẅẋẍýÿŷẏỳỵỷỹƴźżžẑẓẕƶʒƹƽƿǯ

ḃḅƀƃçćĉċčḉƈďđḋḍḏḑḓƌḟĝğġģḡǥǧǩĥḣḥḧḩḫĵķḱḳḵƙĺļľŀłḷḹḻḽƚḿṁṃńņňǹṅṇṉṋŋơƣṕṗƥŕŗřṙṛṝṟśŝşšṡṣṥṧṩƨţťṫṭṯṱƭưṽṿŵẁẃẅẋẍýÿŷẏỳỵỷỹƴźżžẑẓẕƶʒƹƽƿǯ

ḃḅƀƃçćĉċčḉƈďđḋḍḏḑḓƌḟĝğġģḡǥǧǩĥḣḥḧḩḫĵķḱḳḵƙĺļľŀłḷḹḻḽƚḿṁṃńņňǹṅṇṉṋŋơƣṕṗƥŕŗřṙṛṝṟśŝşšṡṣṥṧṩƨţťṫṭṯṱƭưṽṿŵẁẃẅẋẍýÿŷẏỳỵỷỹƴźżžẑẓẕƶʒƹƽƿǯ

ḃḅƀƃçćĉċčḉƈďđḋḍḏḑḓƌḟĝğġģḡǥǧǩĥḣḥḧḩḫĵķḱḳḵƙĺļľŀłḷḹḻḽƚḿṁṃńņňǹṅṇṉṋŋơƣṕṗƥŕŗřṙṛṝṟśŝşšṡṣṥṧṩƨţťṫṭṯṱƭưṽṿŵẁẃẅẋẍýÿŷẏỳỵỷỹƴźżžẑẓẕƶʒƹƽƿǯ

No marks: rare, digraph etc.

ʗ ʤ DZ Dz dz DŽ Dž dž LJ Lj lj NJ Nj nj
ʗ ʤ DZ Dz dz DŽ Dž dž LJ Lj lj NJ Nj nj
ʗ ʤ DZ Dz dz DŽ Dž dž LJ Lj lj NJ Nj nj
ʗ ʤ DZ Dz dz DŽ Dž dž LJ Lj lj NJ Nj nj

Small capitals

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z Æ Ð Œ Þ Ĳ ß Ŋ
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z Æ Ð Œ Þ Ĳ ß Ŋ
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z Æ Ð Œ Þ Ĳ ß Ŋ
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z Æ Ð Œ Þ Ĳ ß Ŋ

Bases requiring anchors

a e i o u y æ œ b c d f g j k l m n p q r s t v w z ɐ ɑ ɒ ɓ ɕ ɖ ɗ ə ɛ ɜ ɵ ɟ ʄ ɡ ɢ ɣ ɤ ɥ ɦ ɬ ɮ ɭ ɻ ɯ ɱ ɲ ɳ ɴ ɵ ɶ ɹ ɺ ɽ ʁ ʂ ʃ ʇ ʉ ʊ ʌ ʏ ʐ ʑ ʒ ǰ ʟ
a e i o u y æ œ b c d f g j k l m n p q r s t v w z ɐ ɑ ɒ ɓ ɕ ɖ ɗ ə ɛ ɜ ɵ ɟ ʄ ɡ ɢ ɣ ɤ ɥ ɦ ɬ ɮ ɭ ɻ ɯ ɱ ɲ ɳ ɴ ɵ ɶ ɹ ɺ ɽ ʁ ʂ ʃ ʇ ʉ ʊ ʌ ʏ ʐ ʑ ʒ ǰ ʟ
a e i o u y æ œ b c d f g j k l m n p q r s t v w z ɐ ɑ ɒ ɓ ɕ ɖ ɗ ə ɛ ɜ ɵ ɟ ʄ ɡ ɢ ɣ ɤ ɥ ɦ ɬ ɮ ɭ ɻ ɯ ɱ ɲ ɳ ɴ ɵ ɶ ɹ ɺ ɽ ʁ ʂ ʃ ʇ ʉ ʊ ʌ ʏ ʐ ʑ ʒ ǰ ʟ
a e i o u y æ œ b c d f g j k l m n p q r s t v w z ɐ ɑ ɒ ɓ ɕ ɖ ɗ ə ɛ ɜ ɵ ɟ ʄ ɡ ɢ ɣ ɤ ɥ ɦ ɬ ɮ ɭ ɻ ɯ ɱ ɲ ɳ ɴ ɵ ɶ ɹ ɺ ɽ ʁ ʂ ʃ ʇ ʉ ʊ ʌ ʏ ʐ ʑ ʒ ǰ ʟ

Precomposed characters of anchor-relevant bases and marks

à á â ã ā å ą ǎ ă ắ ằ ẵ ấ ầ ẫ è é ê ẽ ē ę ệ ế ề ễ ì í î ĩ ī į ò ó ô õ ō ọ ộ ố ồ ỗ ù ú û ũ ū ụ ỳ ý ŷ ỹ ȳ ẏ ḍ ḽ ṇ ṛ ṣ ṭ ẓ
à á â ã ā å ą ǎ ă ắ ằ ẵ ấ ầ ẫ è é ê ẽ ē ę ệ ế ề ễ ì í î ĩ ī į ò ó ô õ ō ọ ộ ố ồ ỗ ù ú û ũ ū ụ ỳ ý ŷ ỹ ȳ ẏ ḍ ḽ ṇ ṛ ṣ ṭ ẓ
à á â ã ā å ą ǎ ă ắ ằ ẵ ấ ầ ẫ è é ê ẽ ē ę ệ ế ề ễ ì í î ĩ ī į ò ó ô õ ō ọ ộ ố ồ ỗ ù ú û ũ ū ụ ỳ ý ŷ ỹ ȳ ẏ ḍ ḽ ṇ ṛ ṣ ṭ ẓ
à á â ã ā å ą ǎ ă ắ ằ ẵ ấ ầ ẫ è é ê ẽ ē ę ệ ế ề ễ ì í î ĩ ī į ò ó ô õ ō ọ ộ ố ồ ỗ ù ú û ũ ū ụ ỳ ý ŷ ỹ ȳ ẏ ḍ ḽ ṇ ṛ ṣ ṭ ẓ

Base and mark shaping

These grids display base and mark rendering in XeLaTeX documents in Libertinus serif regular, italic, semibold and semibold italic. Note that LSP uses the Libertinus fonts named “Semibold“, e.g. `LibertinusSerif-Semibold.otf`, for all boldface style.

A black color means GPOS anchor positioning.

A blue color means a precomposed glyph.

A red color means harfbuzz fallback shaping.

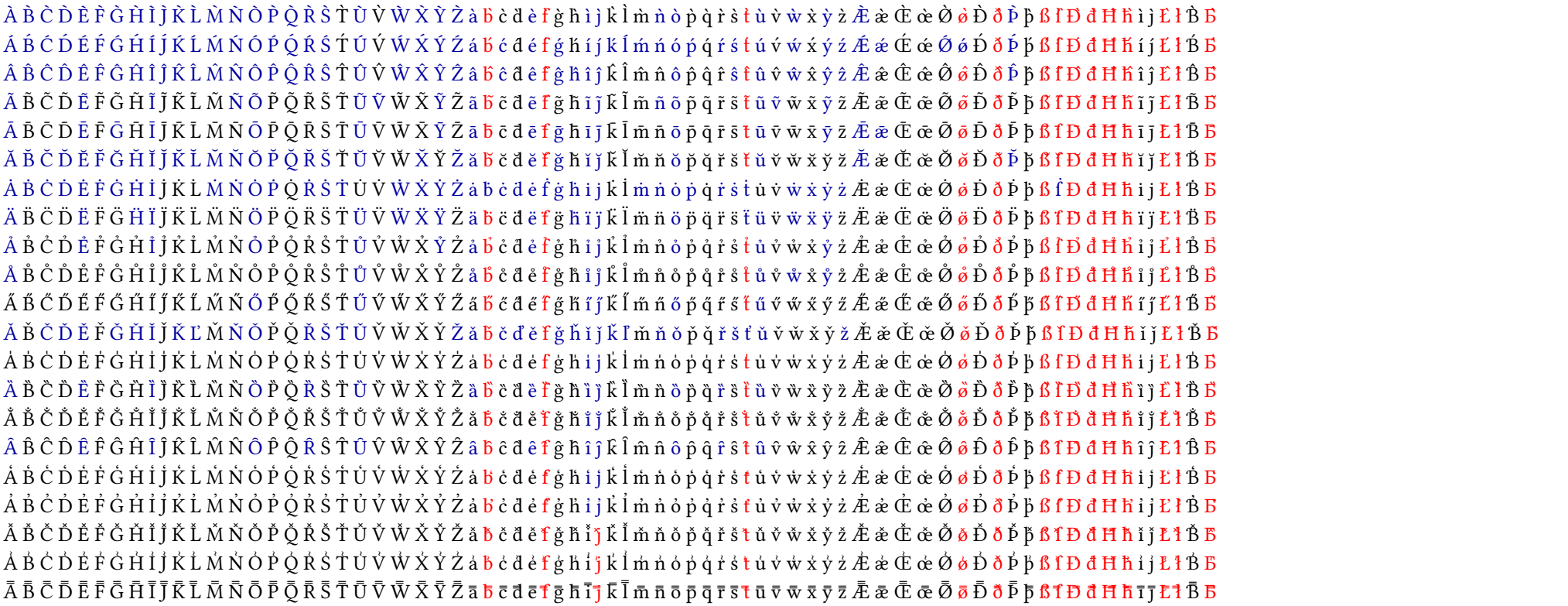
A dark blue color means a substituted base or mark

A light gray color means a mark (or less likely a base) is not in the font

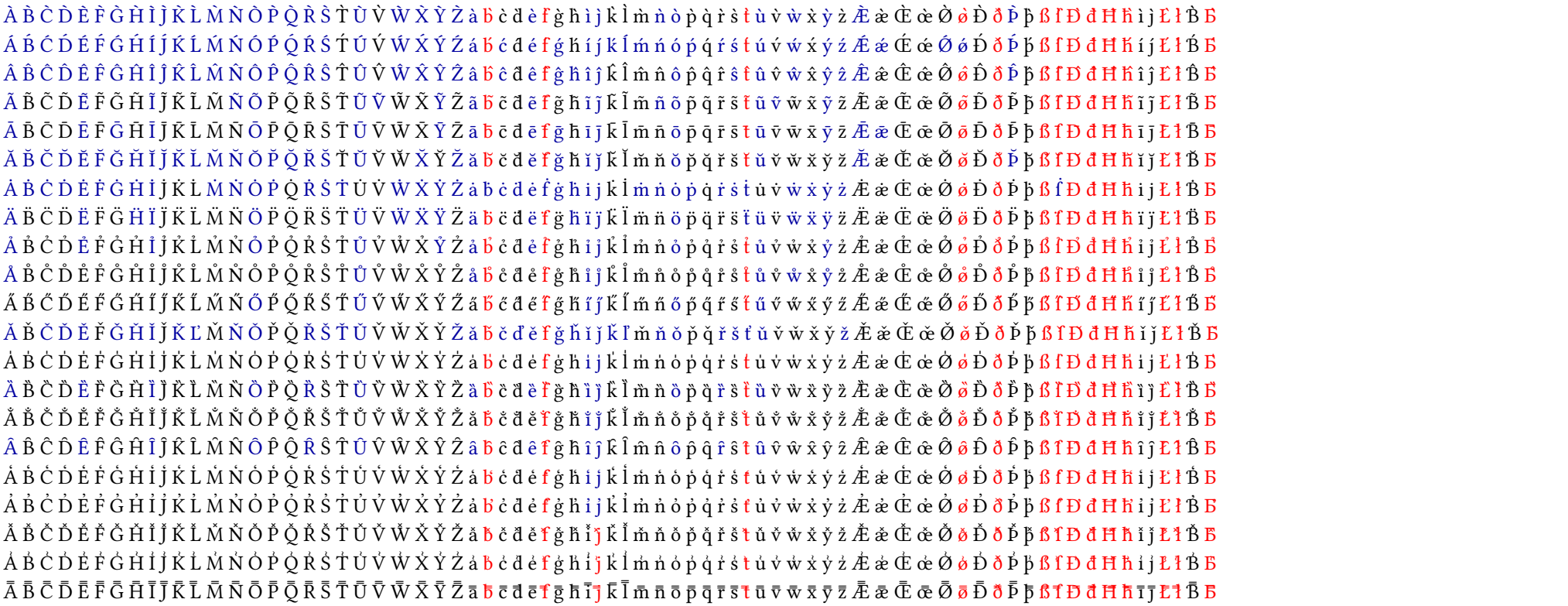
A light blue color means a precomposed glyphs is expected by substitution, but somehow missing in the font (probably impossible).

This is similar to the Anchor Control window in FontForge, but instead prints the real rendering of base-mark combos in XeLaTeX, instead of the just the base-mark combos with set anchors.

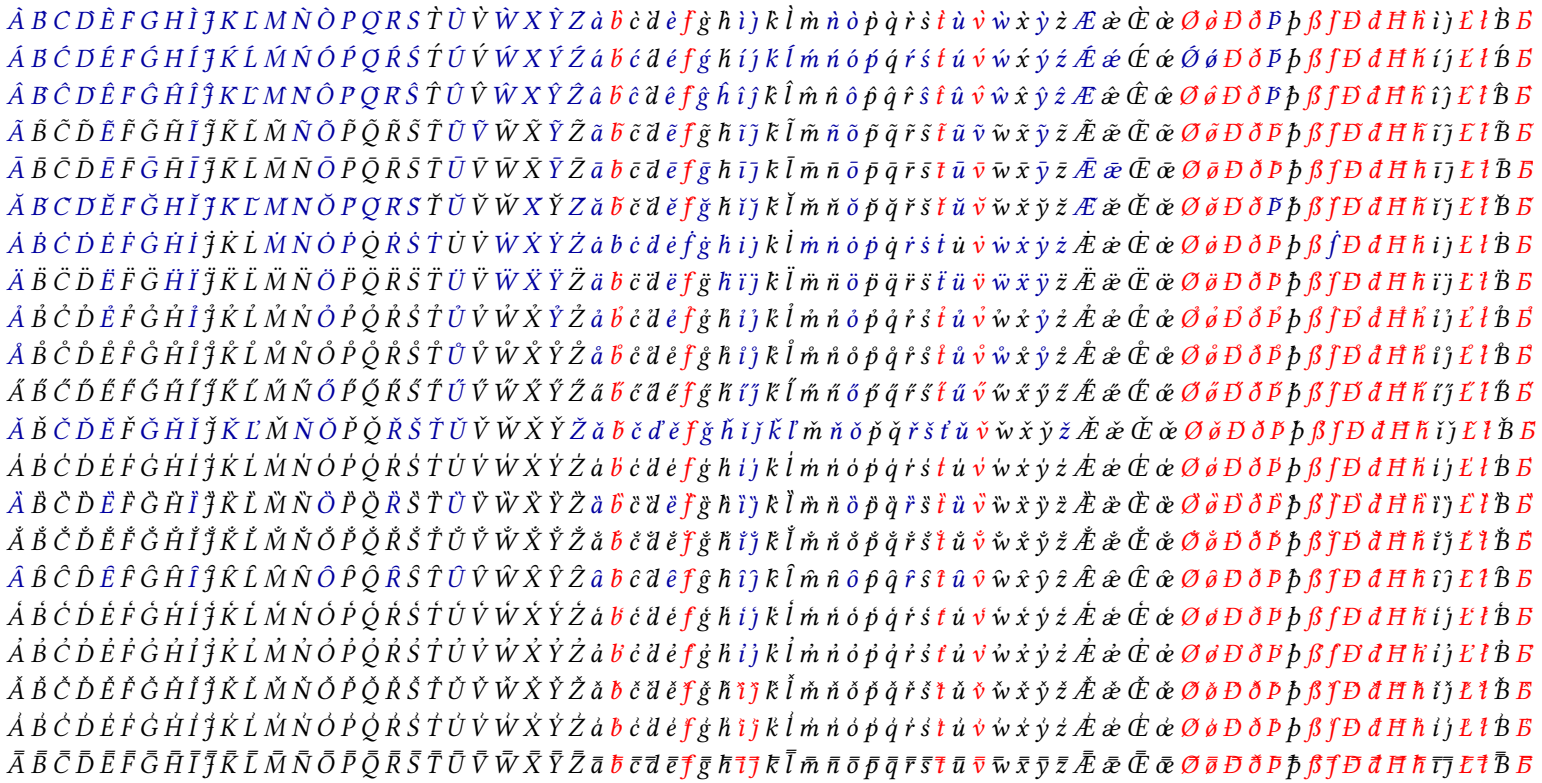
Regular, Latin, Above



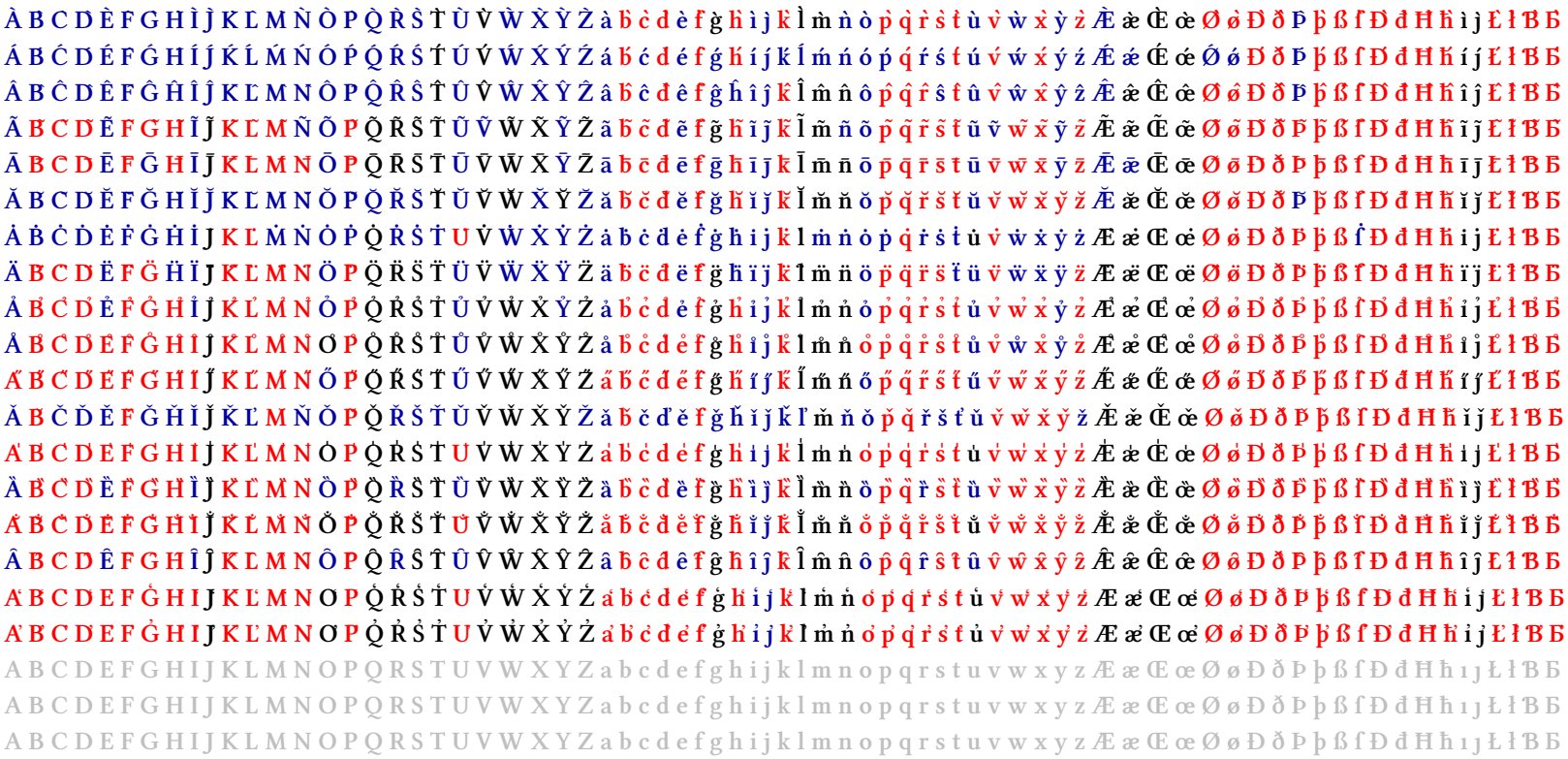
Regular patched, Latin, Above



Italic, Latin, Above

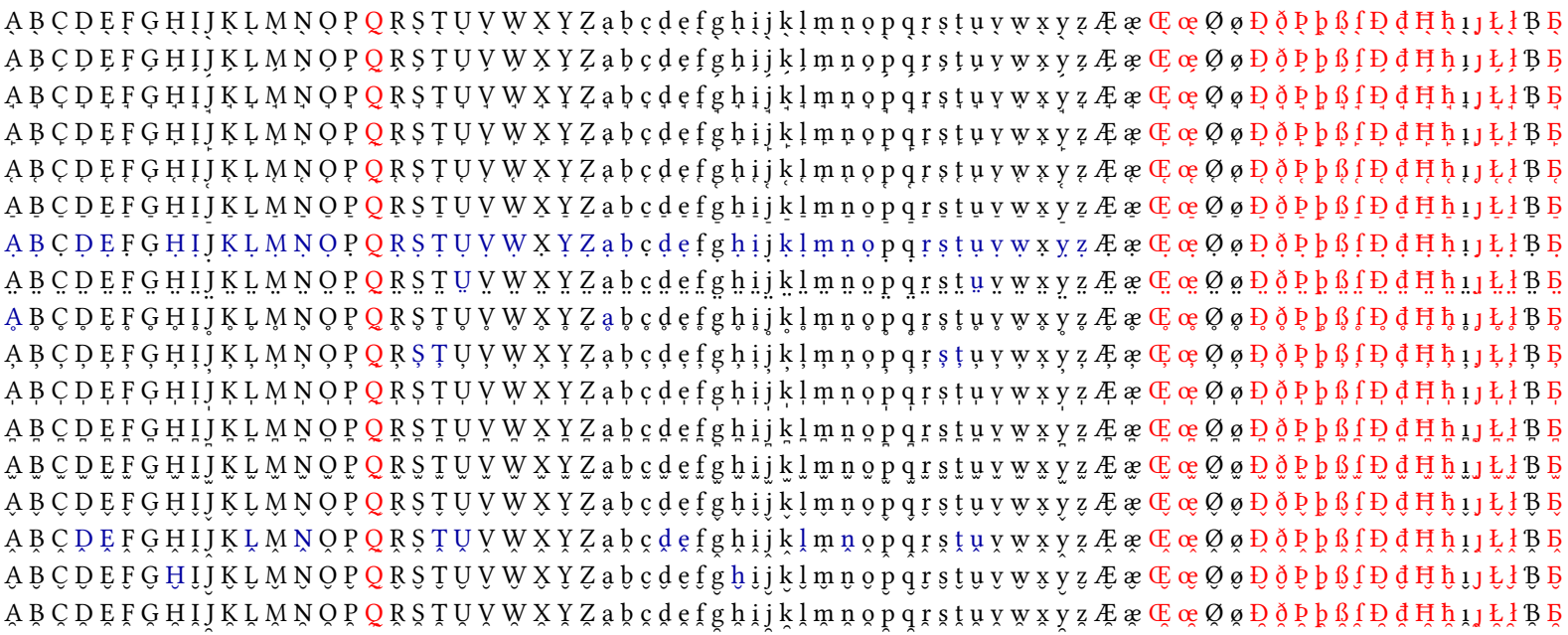


Semibold, Latin, Above



Semibold italic, Latin, Above

Regular, Latin, Below



Regular patched, Latin, Below

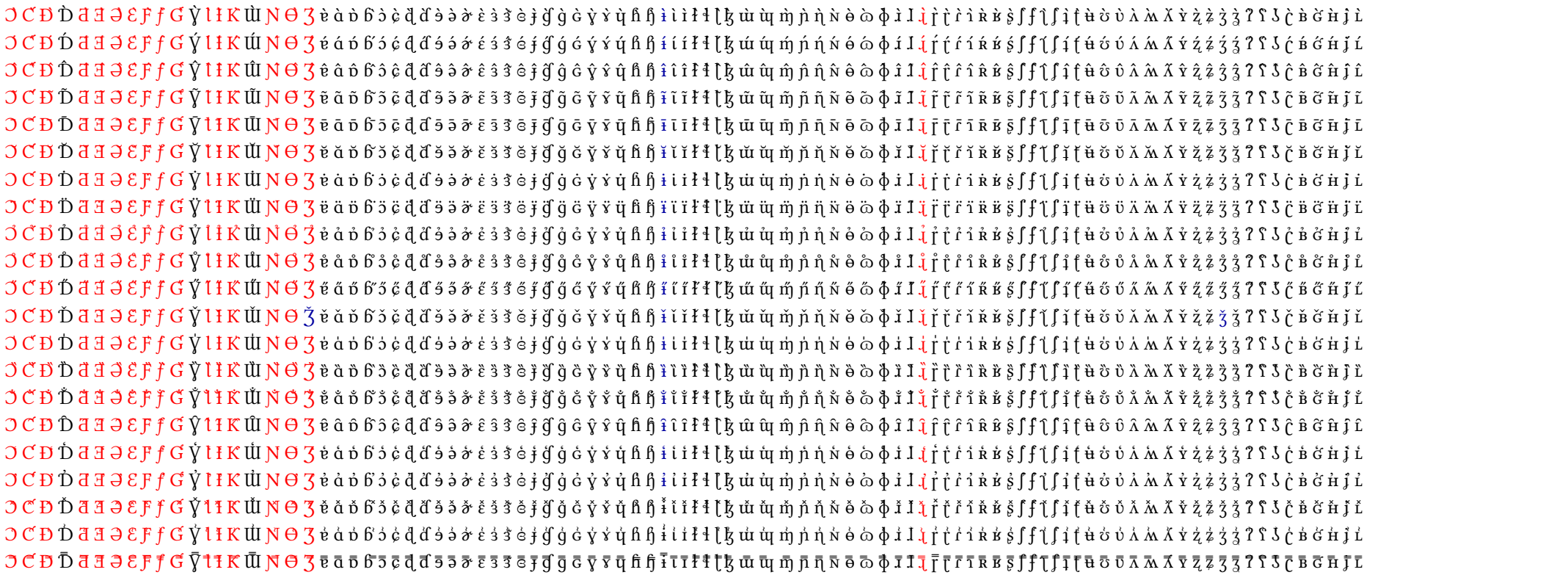
Italic, Latin, Below

Semibold, Latin, Below

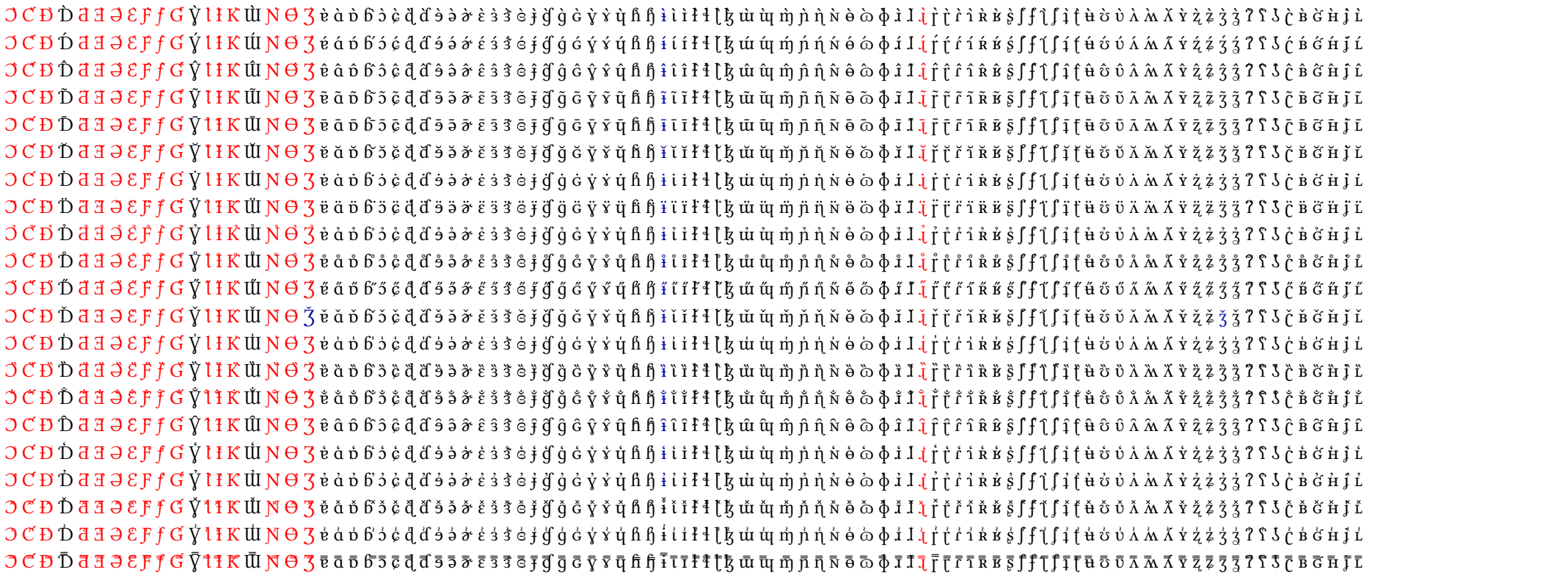
Semibold italic, Latin, Below

A̖ B̖ C̖ D̖ E̖ F̖ G̖ H̖ I̖ J̖ K̖ L̖ M̖ N̖ O̖ P̖ Q̖ R̖ S̖ T̖ U̖ V̖ W̖ X̖ Y̖ Z̖ a̖ b̖ c̖ d̖ e̖ f̖ g̖ h̖ i̖ j̖ k̖ l̖ m̖ n̖ o̖ p̖ q̖ r̖ s̖ t̖ u̖ v̖ w̖ x̖ y̖ z̖ Æ̖ æ̖ Œ̖ œ̖ Ø̖ ø̖ Ð̖ ð̖ Þ̖ þ̖ ß̖ ʃ̖ Đ̖ đ̖ Ħ̖ ħ̖ ı̖ ȷ̖ Ł̖ ł̖ Ƀ̖ Ƃ̖
A̗ B̗ C̗ D̗ E̗ F̗ G̗ H̗ I̗ J̗ K̗ L̗ M̗ N̗ O̗ P̗ Q̗ R̗ S̗ T̗ U̗ V̗ W̗ X̗ Y̗ Z̗ a̗ b̗ c̗ d̗ e̗ f̗ g̗ h̗ i̗ j̗ k̗ l̗ m̗ n̗ o̗ p̗ q̗ r̗ s̗ t̗ u̗ v̗ w̗ x̗ y̗ z̗ Æ̗ æ̗ Œ̗ œ̗ Ø̗ ø̗ Ð̗ ð̗ Þ̗ þ̗ ß̗ ʃ̗ Đ̗ đ̗ Ħ̗ ħ̗ ı̗ ȷ̗ Ł̗ ł̗ Ƀ̗ Ƃ̗
A̘ B̘ C̘ D̘ E̘ F̘ G̘ H̘ I̘ J̘ K̘ L̘ M̘ N̘ O̘ P̘ Q̘ R̘ S̘ T̘ U̘ V̘ W̘ X̘ Y̘ Z̘ a̘ b̘ c̘ d̘ e̘ f̘ g̘ h̘ i̘ j̘ k̘ l̘ m̘ n̘ o̘ p̘ q̘ r̘ s̘ t̘ u̘ v̘ w̘ x̘ y̘ z̘ Æ̘ æ̘ Œ̘ œ̘ Ø̘ ø̘ Ð̘ ð̘ Þ̘ þ̘ ß̘ ʃ̘ Đ̘ đ̘ Ħ̘ ħ̘ ı̘ ȷ̘ Ł̘ ł̘ Ƀ̘ Ƃ̘
A̙ B̙ C̙ D̙ E̙ F̙ G̙ H̙ I̙ J̙ K̙ L̙ M̙ N̙ O̙ P̙ Q̙ R̙ S̙ T̙ U̙ V̙ W̙ X̙ Y̙ Z̙ a̙ b̙ c̙ d̙ e̙ f̙ g̙ h̙ i̙ j̙ k̙ l̙ m̙ n̙ o̙ p̙ q̙ r̙ s̙ t̙ u̙ v̙ w̙ x̙ y̙ z̙ Æ̙ æ̙ Œ̙ œ̙ Ø̙ ø̙ Ð̙ ð̙ Þ̙ þ̙ ß̙ ʃ̙ Đ̙ đ̙ Ħ̙ ħ̙ ı̙ ȷ̙ Ł̙ ł̙ Ƀ̙ Ƃ̙
A̜ B̜ C̜ D̜ E̜ F̜ G̜ H̜ I̜ J̜ K̜ L̜ M̜ N̜ O̜ P̜ Q̜ R̜ S̜ T̜ U̜ V̜ W̜ X̜ Y̜ Z̜ a̜ b̜ c̜ d̜ e̜ f̜ g̜ h̜ i̜ j̜ k̜ l̜ m̜ n̜ o̜ p̜ q̜ r̜ s̜ t̜ u̜ v̜ w̜ x̜ y̜ z̜ Æ̜ æ̜ Œ̜ œ̜ Ø̜ ø̜ Ð̜ ð̜ Þ̜ þ̜ ß̜ ʃ̜ Đ̜ đ̜ Ħ̜ ħ̜ ı̜ ȷ̜ Ł̜ ł̜ Ƀ̜ Ƃ̜
A̱ Ḇ C̱ Ḏ E̱ F̱ G̱ H̱ I̱ J̱ Ḵ Ḻ M̱ Ṉ O̱ P̱ Q̱ Ṟ S̱ Ṯ U̱ V̱ W̱ X̱ Y̱ Ẕ a̱ ḇ c̱ ḏ e̱ f̱ g̱ ẖ i̱ j̱ ḵ ḻ m̱ ṉ o̱ p̱ q̱ ṟ s̱ ṯ u̱ v̱ w̱ x̱ y̱ ẕ Æ̱ æ̱ Œ̱ œ̱ Ø̱ ø̱ Ð̱ ð̱ Þ̱ þ̱ ß̱ ʃ̱ Đ̱ đ̱ Ħ̱ ħ̱ ı̱ ȷ̱ Ł̱ ł̱ Ƀ̱ Ƃ̱
Ạ Ḅ C̣ Ḍ Ẹ F̣ G̣ Ḥ Ị J̣ Ḳ Ḷ Ṃ Ṇ Ọ P̣ Q̣ Ṛ Ṣ Ṭ Ụ Ṿ Ẉ X̣ Ỵ Ẓ ạ ḅ c̣ ḍ ẹ f̣ g̣ ḥ ị j̣ ḳ ḷ ṃ ṇ ọ p̣ q̣ ṛ ṣ ṭ ụ ṿ ẉ x̣ ỵ ẓ Æ̣ æ̣ Œ̣ œ̣ Ø̣ ø̣ Ð̣ ð̣ Þ̣ þ̣ ß̣ ʃ̣ Đ̣ đ̣ Ħ̣ ħ̣ ı̣ ȷ̣ Ł̣ ł̣ Ƀ̣ Ƃ̣
A̤ B̤ C̤ D̤ E̤ F̤ G̤ H̤ I̤ J̤ K̤ L̤ M̤ N̤ O̤ P̤ Q̤ R̤ S̤ T̤ Ṳ V̤ W̤ X̤ Y̤ Z̤ a̤ b̤ c̤ d̤ e̤ f̤ g̤ h̤ i̤ j̤ k̤ l̤ m̤ n̤ o̤ p̤ q̤ r̤ s̤ t̤ ṳ v̤ w̤ x̤ y̤ z̤ Æ̤ æ̤ Œ̤ œ̤ Ø̤ ø̤ Ð̤ ð̤ Þ̤ þ̤ ß̤ ʃ̤ Đ̤ đ̤ Ħ̤ ħ̤ ı̤ ȷ̤ Ł̤ ł̤ Ƀ̤ Ƃ̤
Ḁ B̥ C̥ D̥ E̥ F̥ G̥ H̥ I̥ J̥ K̥ L̥ M̥ N̥ O̥ P̥ Q̥ R̥ S̥ T̥ U̥ V̥ W̥ X̥ Y̥ Z̥ ḁ b̥ c̥ d̥ e̥ f̥ g̥ h̥ i̥ j̥ k̥ l̥ m̥ n̥ o̥ p̥ q̥ r̥ s̥ t̥ u̥ v̥ w̥ x̥ y̥ z̥ Æ̥ æ̥ Œ̥ œ̥ Ø̥ ø̥ Ð̥ ð̥ Þ̥ þ̥ ß̥ ʃ̥ Đ̥ đ̥ Ħ̥ ħ̥ ı̥ ȷ̥ Ł̥ ł̥ Ƀ̥ Ƃ̥
A̦ B̦ C̦ D̦ E̦ F̦ G̦ H̦ I̦ J̦ K̦ L̦ M̦ N̦ O̦ P̦ Q̦ R̦ Ș Ț U̦ V̦ W̦ X̦ Y̦ Z̦ a̦ b̦ c̦ d̦ e̦ f̦ g̦ h̦ i̦ j̦ k̦ l̦ m̦ n̦ o̦ p̦ q̦ r̦ ș ț u̦ v̦ w̦ x̦ y̦ z̦ Æ̦ æ̦ Œ̦ œ̦ Ø̦ ø̦ Ð̦ ð̦ Þ̦ þ̦ ß̦ ʃ̦ Đ̦ đ̦ Ħ̦ ħ̦ ı̦ ȷ̦ Ł̦ ł̦ Ƀ̦ Ƃ̦
A̩ B̩ C̩ D̩ E̩ F̩ G̩ H̩ I̩ J̩ K̩ L̩ M̩ N̩ O̩ P̩ Q̩ R̩ S̩ T̩ U̩ V̩ W̩ X̩ Y̩ Z̩ a̩ b̩ c̩ d̩ e̩ f̩ g̩ h̩ i̩ j̩ k̩ l̩ m̩ n̩ o̩ p̩ q̩ r̩ s̩ t̩ u̩ v̩ w̩ x̩ y̩ z̩ Æ̩ æ̩ Œ̩ œ̩ Ø̩ ø̩ Ð̩ ð̩ Þ̩ þ̩ ß̩ ʃ̩ Đ̩ đ̩ Ħ̩ ħ̩ ı̩ ȷ̩ Ł̩ ł̩ Ƀ̩ Ƃ̩
A̪ B̪ C̪ D̪ E̪ F̪ G̪ H̪ I̪ J̪ K̪ L̪ M̪ N̪ O̪ P̪ Q̪ R̪ S̪ T̪ U̪ V̪ W̪ X̪ Y̪ Z̪ a̪ b̪ c̪ d̪ e̪ f̪ g̪ h̪ i̪ j̪ k̪ l̪ m̪ n̪ o̪ p̪ q̪ r̪ s̪ t̪ u̪ v̪ w̪ x̪ y̪ z̪ Æ̪ æ̪ Œ̪ œ̪ Ø̪ ø̪ Ð̪ ð̪ Þ̪ þ̪ ß̪ ʃ̪ Đ̪ đ̪ Ħ̪ ħ̪ ı̪ ȷ̪ Ł̪ ł̪ Ƀ̪ Ƃ̪
A̼ B̼ C̼ D̼ E̼ F̼ G̼ H̼ I̼ J̼ K̼ L̼ M̼ N̼ O̼ P̼ Q̼ R̼ S̼ T̼ U̼ V̼ W̼ X̼ Y̼ Z̼ a̼ b̼ c̼ d̼ e̼ f̼ g̼ h̼ i̼ j̼ k̼ l̼ m̼ n̼ o̼ p̼ q̼ r̼ s̼ t̼ u̼ v̼ w̼ x̼ y̼ z̼ Æ̼ æ̼ Œ̼ œ̼ Ø̼ ø̼ Ð̼ ð̼ Þ̼ þ̼ ß̼ ʃ̼ Đ̼ đ̼ Ħ̼ ħ̼ ı̼ ȷ̼ Ł̼ ł̼ Ƀ̼ Ƃ̼
A̬ B̬ C̬ D̬ E̬ F̬ G̬ H̬ I̬ J̬ K̬ L̬ M̬ N̬ O̬ P̬ Q̬ R̬ S̬ T̬ U̬ V̬ W̬ X̬ Y̬ Z̬ a̬ b̬ c̬ d̬ e̬ f̬ g̬ h̬ i̬ j̬ k̬ l̬ m̬ n̬ o̬ p̬ q̬ r̬ s̬ t̬ u̬ v̬ w̬ x̬ y̬ z̬ Æ̬ æ̬ Œ̬ œ̬ Ø̬ ø̬ Ð̬ ð̬ Þ̬ þ̬ ß̬ ʃ̬ Đ̬ đ̬ Ħ̬ ħ̬ ı̬ ȷ̬ Ł̬ ł̬ Ƀ̬ Ƃ̬
A̭ B̭ C̭ Ḓ Ḙ F̭ G̭ H̭ I̭ J̭ K̭ Ḽ M̭ Ṋ O̭ P̭ Q̭ R̭ S̭ Ṱ Ṷ V̭ W̭ X̭ Y̭ Z̭ a̭ b̭ c̭ ḓ ḙ f̭ g̭ h̭ i̭ j̭ k̭ ḽ m̭ ṋ o̭ p̭ q̭ r̭ s̭ ṱ ṷ v̭ w̭ x̭ y̭ z̭ Æ̭ æ̭ Œ̭ œ̭ Ø̭ ø̭ Ð̭ ð̭ Þ̭ þ̭ ß̭ ʃ̭ Đ̭ đ̭ Ħ̭ ħ̭ ı̭ ȷ̭ Ł̭ ł̭ Ƀ̭ Ƃ̭
A̮ B̮ C̮ D̮ E̮ F̮ G̮ Ḫ I̮ J̮ K̮ L̮ M̮ N̮ O̮ P̮ Q̮ R̮ S̮ T̮ U̮ V̮ W̮ X̮ Y̮ Z̮ a̮ b̮ c̮ d̮ e̮ f̮ g̮ ḫ i̮ j̮ k̮ l̮ m̮ n̮ o̮ p̮ q̮ r̮ s̮ t̮ u̮ v̮ w̮ x̮ y̮ z̮ Æ̮ æ̮ Œ̮ œ̮ Ø̮ ø̮ Ð̮ ð̮ Þ̮ þ̮ ß̮ ʃ̮ Đ̮ đ̮ Ħ̮ ħ̮ ı̮ ȷ̮ Ł̮ ł̮ Ƀ̮ Ƃ̮
A̯ B̯ C̯ D̯ E̯ F̯ G̯ H̯ I̯ J̯ K̯ L̯ M̯ N̯ O̯ P̯ Q̯ R̯ S̯ T̯ U̯ V̯ W̯ X̯ Y̯ Z̯ a̯ b̯ c̯ d̯ e̯ f̯ g̯ h̯ i̯ j̯ k̯ l̯ m̯ n̯ o̯ p̯ q̯ r̯ s̯ t̯ u̯ v̯ w̯ x̯ y̯ z̯ Æ̯ æ̯ Œ̯ œ̯ Ø̯ ø̯ Ð̯ ð̯ Þ̯ þ̯ ß̯ ʃ̯ Đ̯ đ̯ Ħ̯ ħ̯ ı̯ ȷ̯ Ł̯ ł̯ Ƀ̯ Ƃ̯

Regular, IPA, Above

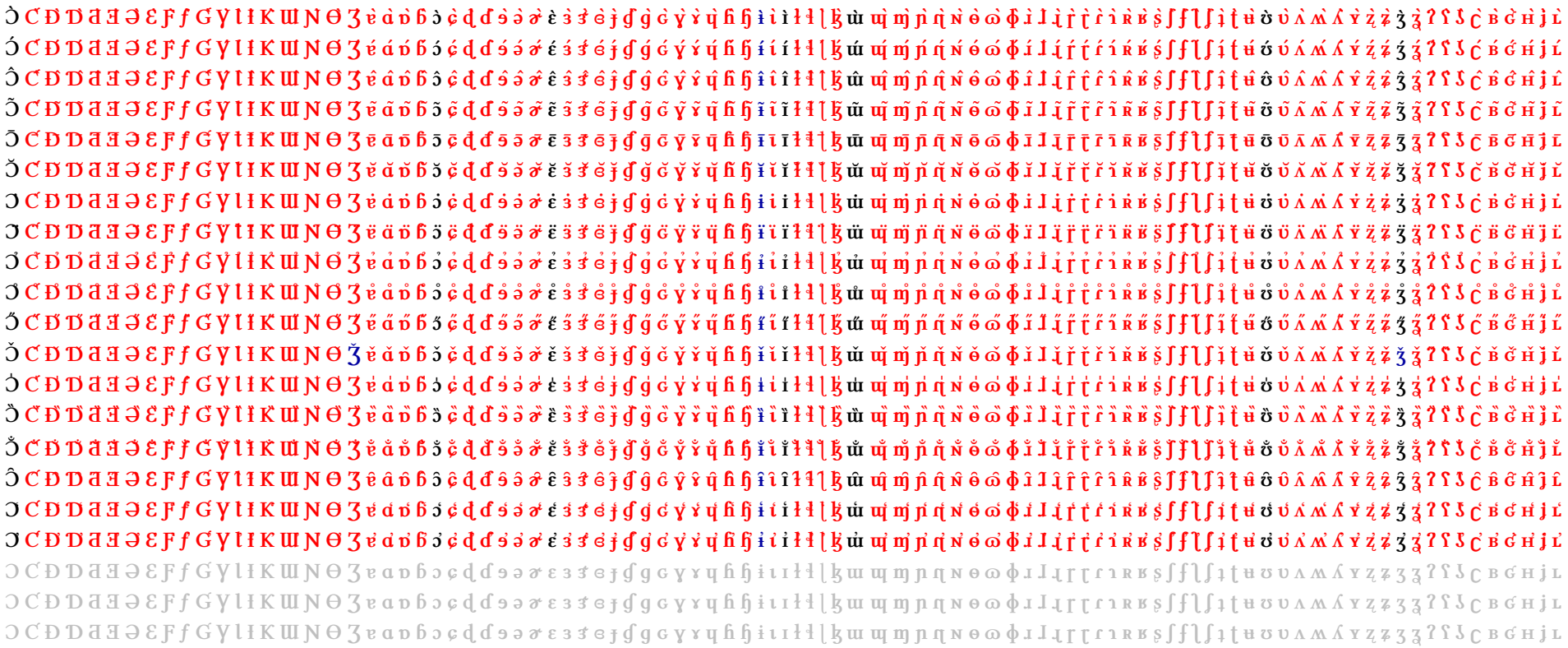


Regular patched, IPA, Above

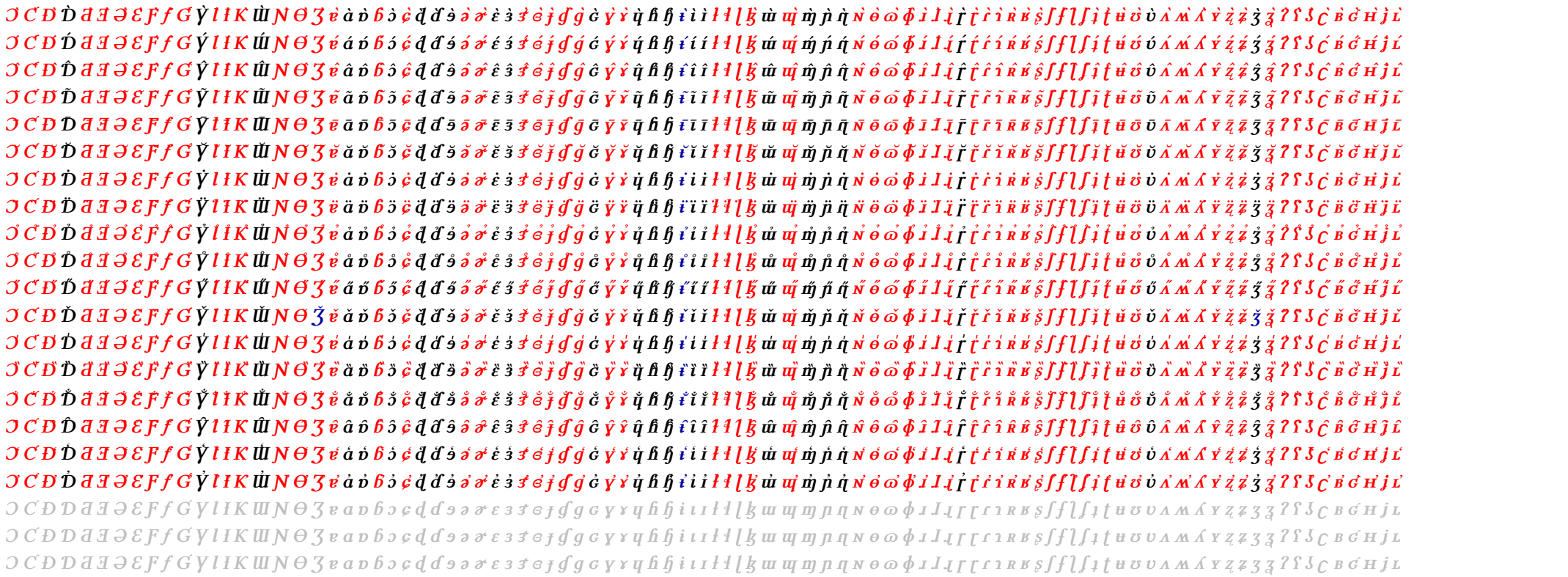


Italic, IPA, Above

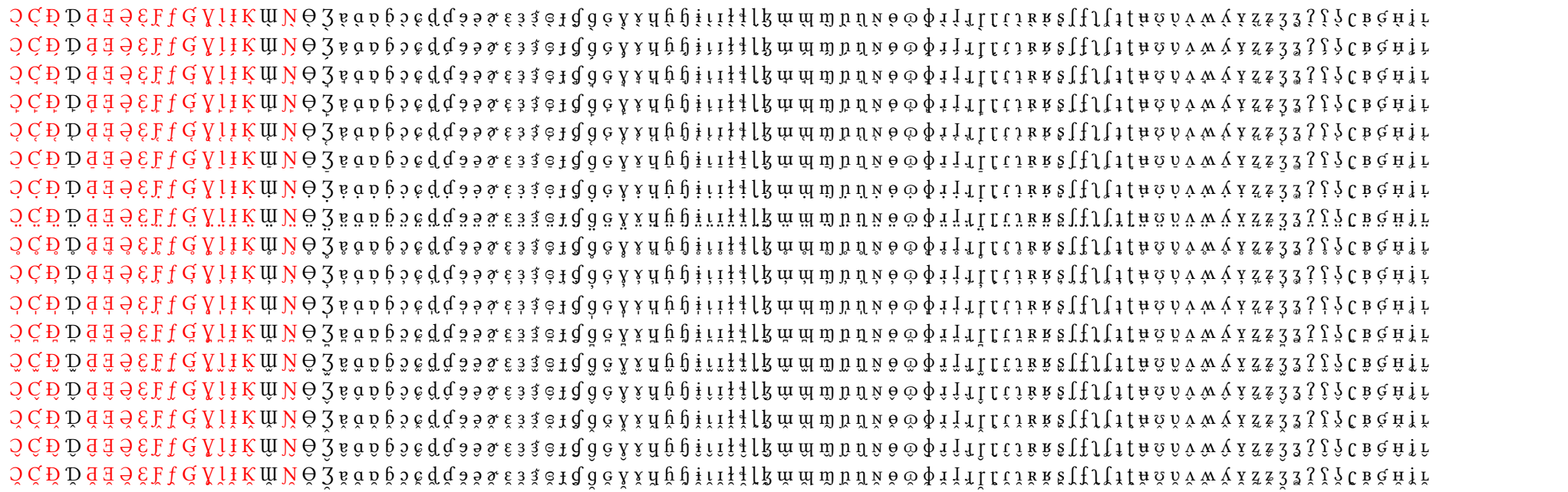
Semibold, IPA, Above



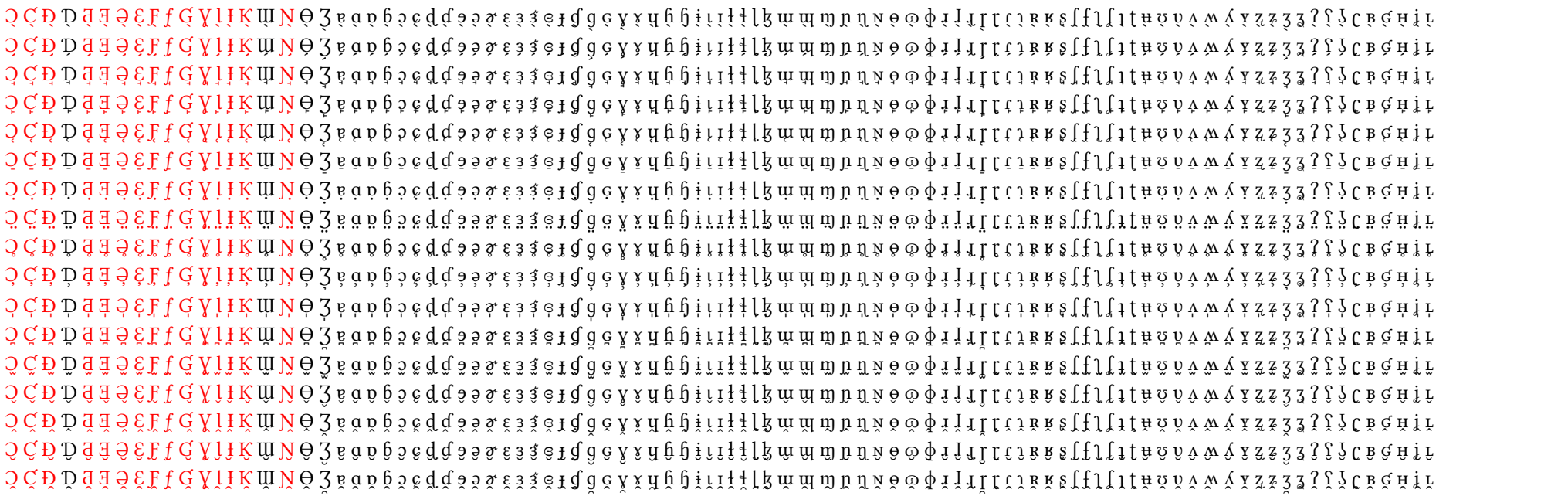
Semibold italic, IPA, Above



Regular, IPA, Below

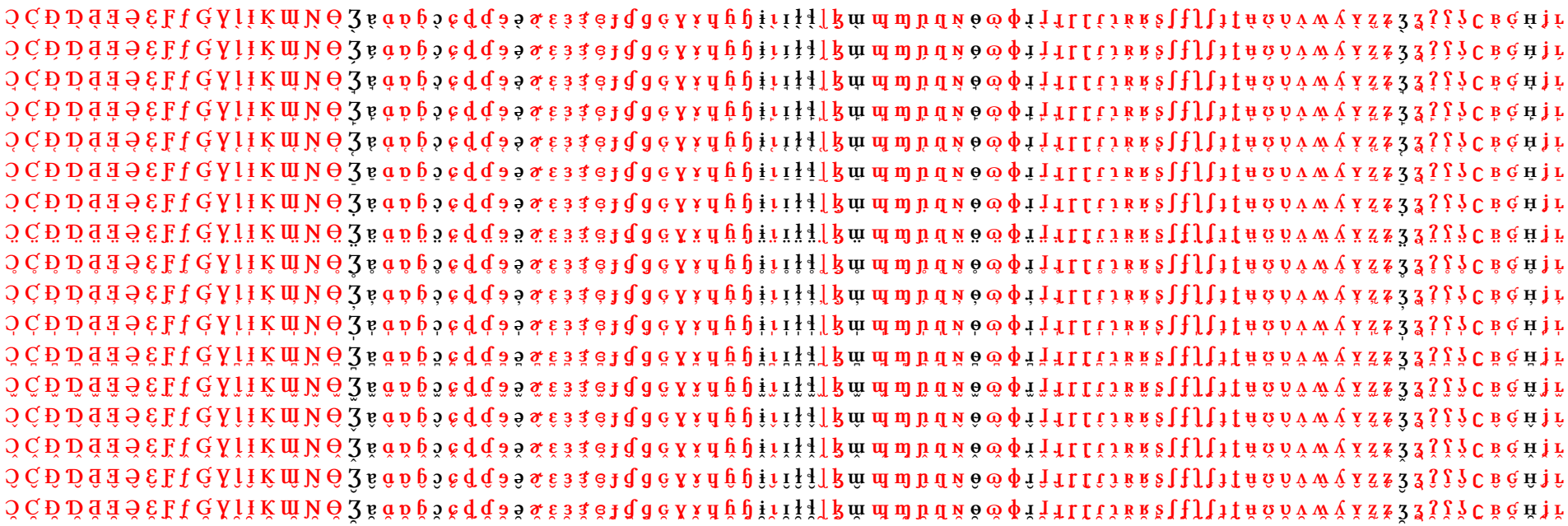


Regular patched, IPA, Below



Italic, IPA, Below

Semibold, IPA, Below



Semibold italic, IPA, Below

IPA diacritics, anchors required

Here are some IPA diacritics. Each row shows all bases that the mark could reasonably be combined with, in some notational system, except for those marks (such as the horn) whose only reasonable combinations are already precomposed character. So, these rows represent those marks that require an anchor, because not all of their reasonable combinations are already precomposed. Of course, anchors are useful during the design stage of a font to normalize precomposed glyphs. But some bases or marks may not need anchors, simply becasue they form no reasonable combinations that are not already precomposed.

A black color means GPOS anchor positioning.

A blue color means a precomposed glyph.

An orange color means harfbuzz fallback shaping.

IPA diacritics – Regular

à è ì l̀ m̀ ǹ ò r̀ ù ỳ æ œ̀ ɐ̀ ɑ̀ ɒ̀ ə̀ ɛ̀ ɜ̀ ɘ̀ ɤ̀ ɯ̀ ɵ̀ œ̀ ʊ̀ ʌ̀ ʏ̀
á d́ é í ĺ ḿ ń ó ŕ ś t́ ú ý ź ǽ œ́ ɐ́ ɑ́ ɒ́ ɕ́ ə́ ɛ́ ɜ́ ɘ́ ɟ́ ɡ́ ɣ́ ɤ́ ɯ́ ɵ́ œ́ ʊ́ ʌ́ ʏ́ ʑ́
â ê î ô û ŷ æ̂ œ̂ ɐ̂ ɑ̂ ɒ̂ ə̂ ɛ̂ ɜ̂ ɘ̂ ɤ̂ ɯ̂ ɵ̂ œ̂ ʊ̂ ʌ̂ ʏ̂
ã ẽ ĩ õ ũ ỹ æ̃ œ̃ ɐ̃ ɑ̃ ɒ̃ ə̃ ɛ̃ ɜ̃ ɘ̃ ɤ̃ ɯ̃ ɵ̃ œ̃ ʊ̃ ʌ̃ ʏ̃
ā ē ī l̄ m̄ n̄ ō r̄ ū ȳ ǣ œ̄ ɐ̄ ɑ̄ ɒ̄ ə̄ ɛ̄ ɜ̄ ɘ̄ ɤ̄ ɯ̄ ɵ̄ œ̄ ʊ̄ ʌ̄ ʏ̄
m̊ n̊ ɲ̊ ŋ̊ l̊ ɬ̊ ɮ̊ ʟ̊ r̊ ɹ̊ ɻ̊ ɻ̥ ʁ̊ ʁ̥ ʊ̊ ʊ̥ ʌ̊ ʝ̊ ʟ̥
ɐ̪ ɑ̪ ɒ̪ ɛ̪ ɜ̪ ɘ̪ ə̪ ɤ̪ ɯ̪ ʊ̪ ʌ̪ ʏ̪ ɵ̪ œ̪
ɐ̬ ɑ̬ ɒ̬ ɛ̬ ɜ̬ ɘ̬ ə̬ ɤ̬ ɯ̬ ʊ̬ ʌ̬ ʏ̬ ɵ̬ œ̬
ɐ̰ ɑ̰ ɒ̰ ɛ̰ ɜ̰ ɘ̰ ə̰ ɤ̰ ɯ̰ ʊ̰ ʌ̰ ʏ̰ ɵ̰ œ̰ ʁ̰ ɤ̞ ʂ̞ ʈ̞ ʊ̞ ʋ̞ ʌ̞ ʏ̞ ʐ̞
ɓ ɗ ɠ ɣ ɻ ǯ ɱ ɳ ɭ̢ ɽ̢ ʷ̢ ʲ̢ ɱ̢ ɲ̢ ɳ̢ ŋ̢
ḷ ṃ ṇ ṛ ɬ̣ ɭ̣ ɮ̣ ɱ̣ ɲ̣ ɳ̣ ɴ̣
t̪ d̪ s̪ z̪ n̪
p̰ t̰ k̰ f̰ ʂ̰ ʃ̰ ɕ̰ ç̰ q̰
ɐ̺ ɑ̺ ɒ̺ ɛ̺ ɜ̺ ɘ̺ ə̺ ɤ̺ ɯ̺ ʊ̺ ʌ̺ ʏ̺ ɵ̺ œ̺
ɐ̻ ɑ̻ ɒ̻ ɛ̻ ɜ̻ ɘ̻ ə̻ ɤ̻ ɯ̻ ʊ̻ ʌ̻ ʏ̻ ɵ̻ œ̻
t̼ d̼ s̼ z̼ n̼
t̽ d̽ s̽ z̽ n̽

IPA diacritics – Italic

à è ì l̀ m̀ ǹ ò r̀ ù ỳ æ œ̀ ɐ̀ ɑ̀ ɒ̀ ə̀ ɛ̀ ɜ̀ ɘ̀ ɤ̀ ɯ̀ ɵ̀ œ̀ ʊ̀ ʌ̀ ʏ̀
á d́ é í ĺ ḿ ń ó ŕ ś t́ ú ý ź ǽ œ́ ɐ́ ɑ́ ɒ́ ɕ́ ə́ ɛ́ ɜ́ ɘ́ ɟ́ ɡ́ ɣ́ ɤ́ ɯ́ ɵ́ œ́ ʊ́ ʌ́ ʏ́ ʑ́
â ê î ô û ŷ æ̂ œ̂ ɐ̂ ɑ̂ ɒ̂ ə̂ ɛ̂ ɜ̂ ɘ̂ ɤ̂ ɯ̂ ɵ̂ œ̂ ʊ̂ ʌ̂ ʏ̂
ã ẽ ĩ õ ũ ỹ æ̃ œ̃ ɐ̃ ɑ̃ ɒ̃ ə̃ ɛ̃ ɜ̃ ɘ̃ ɤ̃ ɯ̃ ɵ̃ œ̃ ʊ̃ ʌ̃ ʏ̃
ā ē ī l̄ m̄ n̄ ō r̄ ū ȳ ǣ œ̄ ɐ̄ ɑ̄ ɒ̄ ə̄ ɛ̄ ɜ̄ ɘ̄ ɤ̄ ɯ̄ ɵ̄ œ̄ ʊ̄ ʌ̄ ʏ̄
m̊ n̊ ɲ̊ ŋ̊ l̊ ɬ̊ ɮ̊ ʟ̊ r̊ ɹ̊ ɻ̊ ɻ̥ ʁ̊ ʁ̥ ʊ̊ ʊ̥ ʌ̊ ʝ̊ ʟ̥

ɐ ɑ ɒ ɛ ɜ ɘ ə ɤ ɯ ʊ ʌ ʏ ɵ œ

ɐ ɑ ɒ ɛ ɜ ɘ ə ɤ ɯ ʊ ʌ ʏ ɵ œ

ą ę į ǫ ų ɣ æ œ ɐ ɑ ɒ ɓ ɖ ɗ ɘ ɛ ɜ ɞ ʃ ɠ ɣ ɤ ɥ ɦ ɭ ɯ ɳ ɵ œ ʁ ʁ̈ ʂ ʈ ʊ ʋ ʌ ʏ ʒ

ɓ ɖ ɠ ɣ ʐ ʒ ɱ ɳ ɭ ɾ ʍ ʲ ɯ̈ ɲ ŋ ŋ

ɭ ɱ ɳ ɾ ɬ ɺ ɮ ɯ̈ ɲ ŋ ɴ

ʈ ɖ ʂ ʐ ɳ

ɓ ʈ ƙ ɟ ʂ ʃ ɕ ç ɡ

ɐ ɑ ɒ ɛ ɜ ɞ ə ɤ ɯ ʊ ʌ ʏ ɵ œ

ɐ̄ ɑ̄ ɒ̄ ɛ̄ ɜ̄ ɞ̄ ə̄ ɤ̄ ɯ̄ ʊ̄ ʌ̄ ʏ̄ ɵ̄ œ̄

ʈ ɖ ʂ ʐ ɳ

ʈ ɖ ʂ ʐ ɳ

IPA diacritics – Semibold

à è ì l̀ m̀ ǹ ò r̀ ù ỳ æ œ̀ ɐ̀ ɑ̀ ɒ̀ ə̀ ɛ̀ ɜ̀ ɞ̀ ɤ̀ ɯ̀ ɵ̀ œ̀ ʊ̀ ʌ̀ ʏ̀

á d́ é í ĺ ḿ ń ó ŕ ś ʈ́ ú ý ź ǽ œ́ ɐ́ ɑ́ ɒ́ ɕ́ ɔ́ ə́ ɛ́ ɜ́ ɞ́ ɟ́ ɡ́ ɣ́ ɤ́ ɯ́ ɵ́ œ́ ʊ́ ʌ́ ʏ́ ʑ́

â ê î ô û ŷ æ̂ œ̂ ɐ̂ ɑ̂ ɒ̂ ɔ̂ ə̂ ɛ̂ ɜ̂ ɞ̂ ɤ̂ ɯ̂ ɵ̂ œ̂ ʊ̂ ʌ̂ ʏ̂

ã ẽ ĩ õ ũ ỹ æ̃ œ̃ ɐ̃ ɑ̃ ɒ̃ ɔ̃ ə̃ ɛ̃ ɜ̃ ɞ̃ ɤ̃ ɯ̃ ɵ̃ œ̃ ʊ̃ ʌ̃ ʏ̃

ā ē ī l̄ m̄ n̄ ō r̄ ū ȳ ǣ œ̄ ɐ̄ ɑ̄ ɒ̄ ɔ̄ ə̄ ɛ̄ ɜ̄ ɞ̄ ɤ̄ ɯ̄ ɵ̄ œ̄ ʊ̄ ʌ̄ ʏ̄

m̊ n̊ ɲ̊ ŋ̊ l̥ ɬ̥ ɮ̥ r̥ ɻ̊ ɭ̊ ɻ̊ ʁ̊ ʁ̈̊ ʊ̥ ɥ̊ ʌ̊ ʝ̊ ʟ̊

ɐ̣ ɑ̣ ɒ̣ ɛ̣ ɜ̣ ɞ̣ ə̣ ɤ̣ ɯ̣ ʊ̣ ʌ̣ ʏ̣ ɵ̣ œ̣

ɐ̰ ɑ̰ ɒ̰ ɛ̰ ɜ̰ ɞ̰ ə̰ ɤ̰ ɯ̰ ʊ̰ ʌ̰ ʏ̰ ɵ̰ œ̰

ą ę į ǫ ų ɣ æ œ ɐ̹ ɑ̹ ɒ̹ ɓ̹ ɖ̹ ɗ̹ ə̹ ɛ̹ ɜ̹ ɞ̹ ɠ̹ ɡ̹ ɣ̹ ɤ̹ ɥ̹ ɦ̹ ɭ̹ ɯ̹ ɳ̹ ɵ̹ œ̹ ʁ̹ ʁ̹̈ ʂ̹ ʈ̹ ʊ̹ ɻ̹ ʌ̹ ʏ̹ ʒ̹

ɓ̤ ɖ̤ ɠ̤ ɣ̤ ʐ̤ ʒ̤ ɱ̤ ɳ̤ ɭ̤ ɾ̤ ʍ̤ ʲ̤ ɯ̤̈ ɲ̤ ŋ̤ ɳ̤ ŋ̤

ɭ̰ ɱ̰ ɳ̰ ɾ̰ ɬ̰ ɺ̰ ɮ̰ ɯ̰̈ ɲ̰ ŋ̰ ɳ̰ ɴ̰

ʈ̤ ɖ̤ ʂ̤ ʐ̤ ɳ̤

ɓ̰ ʈ̰ ƙ̰ ɟ̰ ʂ̰ ʃ̰ ɕ̰ ç̰ ɡ̰

ɐ̤ ɑ̤ ɒ̤ ɛ̤ ɜ̤ ɞ̤ ə̤ ɤ̤ ɯ̤ ʊ̤ ʌ̤ ʏ̤ ɵ̤ œ̤

ɐ ɑ ɒ ɛ ɜ ɘ ə ɤ ɯ ʊ ʌ ʏ ɵ œ

t d s z n

t d s z n

IPA diacritics – Semibold italic

à è ì l̀ m̀ ǹ ò r̀ ù ỳ æ œ̀ ɐ̀ ɑ̀ ɒ̀ ə̀ ɛ̀ ɜ̀ ɞ̀ ɤ̀ ɯ̀ ɵ̀ œ̀ ʊ̀ ʌ̀ ʏ̀

á d́ é í ĺ ḿ ń ó ŕ ś ʈ́ ú ý ź ǽ œ́ ɐ́ ɑ́ ɒ́ ɕ́ ɔ́ ə́ ɛ́ ɜ́ ɞ́ ɟ́ ɡ́ ɣ́ ɤ́ ɯ́ ɵ́ œ́ ʊ́ ʌ́ ʏ́ ʑ́

â ê î ô û ŷ æ̂ œ̂ ɐ̂ ɑ̂ ɒ̂ ɔ̂ ə̂ ɛ̂ ɜ̂ ɞ̂ ɤ̂ ɯ̂ ɵ̂ œ̂ ʊ̂ ʌ̂ ʏ̂

ã ẽ ĩ õ ũ ỹ æ œ ɐ̃ ɑ̃ ɒ̃ ɘ̃ ə̃ ɛ̃ ɜ̃ ɞ̃ ɤ̃ ɯ̃ ɵ̃ ɶ̃ ʊ̃ ʌ̃ ʏ̃

ā ē ī l̄ m̄ n̄ ō r̄ ū ȳ ǣ œ̄ ɐ̄ ɑ̄ ɒ̄ ə̄ ɛ̄ ɜ̄ ɞ̄ ɤ̄ ɯ̄ ɵ̄ ɶ̄ ʊ̄ ʌ̄ ʏ̄

m̊ n̊ ɲ̊ ŋ̊ l̊ ɬ̊ ɮ̊ ʟ̊ r̊ ɹ̊ ɻ̊ ɺ̊ ʀ̊ ʁ̊ ʊ̊ ɻ̊ ʎ̊ ʝ̊ ʟ̊

ɐ̤ ɑ̤ ɒ̤ ɛ̤ ɜ̤ ɞ̤ ə̤ ɤ̤ ɯ̤ ʊ̤ ʌ̤ ʏ̤ ɵ̤ ɶ̤

ɐ̰ ɑ̰ ɒ̰ ɛ̰ ɜ̰ ɞ̰ ə̰ ɤ̰ ɯ̰ ʊ̰ ʌ̰ ʏ̰ ɵ̰ ɶ̰

ą ę į ǫ ų ɣ̨ æ̨ œ̨ ɐ̨ ɑ̨ ɒ̨ ɓ̨ ɖ̨ ɗ̨ ə̨ ɛ̨ ɜ̨ ɞ̨ ɠ̨ ɡ̨ ɣ̨ ɤ̨ ɥ̨ ɦ̨ ɭ̨ ɯ̨ ɳ̨ ɵ̨ ɶ̨ ʁ̨ ɤ̨ ʂ̨ ʈ̨ ʊ̨ ʋ̨ ʌ̨ ʏ̨ ʐ̨

ḅ ḍ ḡ ẏ ẓ ʒ̣ ṃ ṇ ḷ ṛ ẉ j̣ ɱ̣ ɲ̣ ɳ̣ ŋ̣

ḷ̇ ṁ ṅ ṙ ɬ̇ ɭ̇ ʟ̇ ɱ̇ ɲ̇ ɳ̇ ɴ̇

t̪ d̪ s̪ z̪ n̪

p̰ t̰ k̰ f̰ s̰ ʃ̰ ɕ̰ ç̰ q̰

ɐ̰ ɑ̰ ɒ̰ ɛ̰ ɜ̰ ɞ̰ ə̰ ɤ̰ ɯ̰ ʊ̰ ʌ̰ ʏ̰ ɵ̰ ɶ̰

ɐ ɑ ɒ ɛ ɜ ɞ ə ɤ ɯ ʊ ʌ ʏ ɵ ɶ

t d s z n

t d s z n

IPA diacritics, anchors required, all bases

The rows are combining marks that require an anchor for at least one base among it reasoable combinations that are not precomposed. The columns are the bases formed by the union of all reasonable combinations with such marks. Of course, some of these combinations are not resonable, and these combinations are grayed out.

A black color means GPOS anchor positioning.

A blue color means a precomposed glyph.

A red color means harfbuzz fallback shaping.

A gray color means an unreasonable combination, or glyph is missing. In these grids, this usually means that the combination is unreasonable. The only missing glyphs here are the last three (below) combining marks (◌͙ U+0333 double macron below, ◌͚ U+033A inverted bridge below, and ◌͟ U+033B square below) in Libertinus serif semibold and semibold italic.

Regular

Italic

Semibold

Semibold italic

Patch superscript consonant anchors

Libertinus serif regular

h̕ ɦ̕ j̕ r̕ ɹ̕ ɻ̕ ʁ̕ w̕ y̕ ɣ̕ l̕ s̕ x̕ ʕ̕ b̕ k̕ m̕ p̕ t̕ ɯ̕ v̕ ɶ̕ β̕ γ̕ δ̕

h͘ ɦ͘ j͘ r͘ ɹ͘ ɻ͘ ʁ͘ w͘ y͘ ɣ͘ l͘ s͘ x͘ ʕ͘ b͘ k͘ m͘ p͘ t͘ ɯ͘ v͘ ɶ͘ β͘ γ͘ δ͘

h̚ ɦ̚ j̚ r̚ ɹ̚ ɻ̚ ʁ̚ w̚ y̚ ɣ̚ l̚ s̚ x̚ ʕ̚ b̚ k̚ m̚ p̚ t̚ ɯ̚ v̚ ɶ̚ β̚ γ̚ δ̚

h̀ ɦ̀ j̀ r̀ ɹ̀ ɻ̀ ʁ̀ ẁ ỳ ɣ̀ l̀ s̀ x̀ ʕ̀ b̀ k̀ m̀ p̀ t̀ ɯ̀ v̀ ɶ̀ β̀ γ̀ δ̀

h́ ɦ́ j́ ŕ ɹ́ ɻ́ ʁ́ ẃ ý ɣ́ ĺ ś x́ ʕ́ b́ ḱ ḿ ṕ t́ ɯ́ v́ ɶ́ β́ γ́ δ́

ĥ ɦ̂ ĵ r̂ ɹ̂ ɻ̂ ʁ̂ ŵ ŷ ɣ̂ l̂ ŝ x̂ ʕ̂ b̂ k̂ m̂ p̂ t̂ ɯ̂ v̂ ɶ̂ β̂ γ̂ δ̂

Libertinus serif regular, patched

h̕ ɦ̕ j̕ r̕ ɹ̕ ɻ̕ ʁ̕ w̕ y̕ ɣ̕ l̕ s̕ x̕ ʕ̕ b̕ k̕ m̕ p̕ t̕ ɯ̕ v̕ ɶ̕ β̕ γ̕ δ̕

h͘ ɦ͘ j͘ r͘ ɹ͘ ɻ͘ ʁ͘ w͘ y͘ ɣ͘ l͘ s͘ x͘ ʕ͘ b͘ k͘ m͘ p͘ t͘ ɯ͘ v͘ ɶ͘ β͘ γ͘ δ͘

h̚ ɦ̚ j̚ r̚ ɹ̚ ɻ̚ ʁ̚ w̚ y̚ ɣ̚ l̚ s̚ x̚ ʕ̚ b̚ k̚ m̚ p̚ t̚ ɯ̚ v̚ ɶ̚ β̚ γ̚ δ̚

h̀ ɦ̀ j̀ r̀ ɹ̀ ɻ̀ ʁ̀ ẁ ỳ ɣ̀ l̀ s̀ x̀ ʕ̀ b̀ k̀ m̀ p̀ t̀ ɯ̀ v̀ ɶ̀ β̀ γ̀ δ̀

h́ ɦ́ j́ ŕ ɹ́ ɻ́ ʁ́ ẃ ý ɣ́ ĺ ś x́ ʕ́ b́ ḱ ḿ ṕ t́ ɯ́ v́ ɶ́ β́ γ́ δ́

ĥ ɦ̂ ĵ r̂ ɹ̂ ɻ̂ ʁ̂ ŵ ŷ ɣ̂ l̂ ŝ x̂ ʕ̂ b̂ k̂ m̂ p̂ t̂ ɯ̂ v̂ ɶ̂ β̂ γ̂ δ̂

Gentium Plus

h̕ ɦ̕ j̕ r̕ ɹ̕ ɻ̕ ʁ̕ w̕ y̕ ɣ̕ l̕ s̕ x̕ ʕ̕ b̕ k̕ m̕ p̕ t̕ ɯ̕ v̕ ɶ̕ β̕ γ̕ δ̕

h͘ ɦ͘ j͘ r͘ ɹ͘ ɻ͘ ʁ͘ w͘ y͘ ɣ͘ l͘ s͘ x͘ ʕ͘ b͘ k͘ m͘ p͘ t͘ ɯ͘ v͘ ɶ͘ β͘ γ͘ δ͘

h̚ ɦ̚ j̚ r̚ ɹ̚ ɻ̚ ʁ̚ w̚ y̚ ɣ̚ l̚ s̚ x̚ ʕ̚ b̚ k̚ m̚ p̚ t̚ ɯ̚ v̚ ɶ̚ β̚ γ̚ δ̚

h̀ ɦ̀ j̀ r̀ ɹ̀ ɻ̀ ʁ̀ ẁ ỳ ɣ̀ l̀ s̀ x̀ ʕ̀ b̀ k̀ m̀ p̀ t̀ ɯ̀ v̀ ɶ̀ β̀ γ̀ δ̀

h́ ɦ́ j́ ŕ ɹ́ ɻ́ ʁ́ ẃ ý ɣ́ ĺ ś x́ ʕ́ b́ ḱ ḿ ṕ t́ ɯ́ v́ ɶ́ β́ γ́ δ́

ĥ ɦ̂ ĵ r̂ ɹ̂ ɻ̂ ʁ̂ ŵ ŷ ɣ̂ l̂ ŝ x̂ ʕ̂ b̂ k̂ m̂ p̂ t̂ ɯ̂ v̂ ɶ̂ β̂ γ̂ δ̂

A̚ B̚ C̚ D̚ E̚ F̚ G̚ H̚ I̚ J̚ K̚ L̚ M̚ N̚ O̚ P̚ Q̚ R̚ S̚ T̚ U̚ V̚ W̚ X̚ Y̚ Z̚ a̚ b̚ c̚ d̚ e̚ f̚ g̚ h̚ i̚ j̚ k̚ l̚ m̚ n̚ o̚ p̚ q̚ r̚ s̚ t̚ u̚ v̚ w̚ x̚ y̚ z̚ Æ̚ æ̚ Œ̚ œ̚ Ø̚ ø̚ Ð̚ ð̚ Þ̚ þ̚ ß̚ ʃ̚ Ð̚ đ̚ Ħ̚ ħ̚ ı̚ ȷ̚ Ł̚ ł̚ Ɓ̚ Ƃ̚

À B̀ C̀ D̀ È F̀ G̀ H̀ Ì J̀ K̀ L̀ M̀ Ǹ Ò P̀ Q̀ R̀ S̀ T̀ Ù V̀ Ẁ X̀ Ỳ Z̀ à b̀ c̀ d̀ è f̀ g̀ h̀ ì j̀ k̀ l̀ m̀ ǹ ò p̀ q̀ r̀ s̀ t̀ ù v̀ ẁ x̀ ỳ z̀ Æ̀ æ̀ Œ̀ œ̀ Ø̀ ø̀ Ð̀ ð̀ Þ̀ þ̀ ß̀ ʃ̀ Ð̀ đ̀ Ħ̀ ħ̀ ı̀ ȷ̀ Ł̀ ł̀ Ɓ̀ Ƃ̀