

User Guide for the Hebrew GGT- Fonts

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by Graham G. Thomason

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Sample text: Zephaniah 3:8, (contains all Hebrew letters, including finals). 15 pt.

GGTAmos לָכֵן חֲכוּ-לִי נְאֻם-יְהוָה לְיוֹם קוֹמִי לְעֵד כִּי מִשְׁפָּטִי
לְאַסֹּף גּוֹיִם לְקַבְּצֵי מַמְלָכוֹת לְשֹׁפֵד עֲלֵיהֶם זַעֲמִי
כָּל חֲרוֹן אַפִּי כִּי בָאֵשׁ קִנְאַתִּי תֹאכַל כָּל-הָאָרֶץ:

GGTRashi לָכֵן חֲכוּ-לִי נְאֻם-יְהוָה לְיוֹם קוֹמִי לְעֵד כִּי מִשְׁפָּטִי
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GGTDSIa
Dead Sea Scrolls,
Isaiah Ia לָכֵן חֲכוּ-לִי נְאֻם-יְהוָה לְיוֹם קוֹמִי לְעֵד כִּי מִשְׁפָּטִי
לְאַסֹּף גּוֹיִם לְקַבְּצֵי מַמְלָכוֹת לְשֹׁפֵד עֲלֵיהֶם זַעֲמִי
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GGTIvrit
Graham's handwriting -
Modern Hebrew לָכֵן חֲכוּ-לִי נְאֻם-יְהוָה לְיוֹם קוֹמִי לְעֵד כִּי מִשְׁפָּטִי
לְאַסֹּף גּוֹיִם לְקַבְּצֵי מַמְלָכוֹת לְשֹׁפֵד עֲלֵיהֶם זַעֲמִי
כָּל חֲרוֹן אַפִּי כִּי בָאֵשׁ קִנְאַתִּי תֹאכַל כָּל-הָאָרֶץ:

GGTHosea
Graham's handwriting -
printed letters לָכֵן חֲכוּ-לִי נְאֻם-יְהוָה לְיוֹם קוֹמִי לְעֵד כִּי מִשְׁפָּטִי
לְאַסֹּף גּוֹיִם לְקַבְּצֵי מַמְלָכוֹת לְשֹׁפֵד עֲלֵיהֶם זַעֲמִי
כָּל חֲרוֹן אַפִּי כִּי בָאֵשׁ קִנְאַתִּי תֹאכַל כָּל-הָאָרֶץ:

GGTSiloam
Palaeo/Siloam לָכֵן חֲכוּ-לִי נְאֻם-יְהוָה לְיוֹם קוֹמִי לְעֵד כִּי מִשְׁפָּטִי
לְאַסֹּף גּוֹיִם לְקַבְּצֵי מַמְלָכוֹת לְשֹׁפֵד עֲלֵיהֶם זַעֲמִי
כָּל חֲרוֹן אַפִּי כִּי בָאֵשׁ קִנְאַתִּי תֹאכַל כָּל-הָאָרֶץ:

Samaritan לָכֵן חֲכוּ-לִי נְאֻם-יְהוָה לְיוֹם קוֹמִי לְעֵד כִּי מִשְׁפָּטִי
לְאַסֹּף גּוֹיִם לְקַבְּצֵי מַמְלָכוֹת לְשֹׁפֵד עֲלֵיהֶם זַעֲמִי
כָּל חֲרוֹן אַפִּי כִּי בָאֵשׁ קִנְאַתִּי תֹאכַל כָּל-הָאָרֶץ:

What the fonts are based on:

GGTAmos / GGTAmos2	Based on a scan from a Hebrew New Testament from the Trinitarian Bible Society who have confirmed that there is no copyright on the font used.
GGTRashi	http://en.wikipedia.org/wiki/Image:Rashiscript.PNG There is a release statement, for which we are grateful, on that page: <i>I, the copyright holder of this work, hereby release it into the public domain. This applies worldwide.</i> <i>In case this is not legally possible,</i> <i>I grant any entity the right to use this work for any purpose, without any conditions, unless such conditions are required by law.</i>
GGTDS1a	Based on a scan of a facsimile of the Dead Sea Isaiah Ia scroll.
GGTIvrit	Author's own handwriting .
GGTHosea / GGTHosea2	Author's own handwriting.
GGTSiloam	Based on the author's tracing over a photograph of the Siloam inscription.
GGTSamaritan	Based on a scan from Dalman's <i>Grammatik der Aramäisch</i> , 1905 edition.

General

- The author does not believe he is infringing anyone else's copyright in any of these fonts, since the writing style that we are encapsulating is either ancient, declared copyright free, or the author's own. The above sources are the basis only - work has gone into making the fonts as a whole, e.g. some re-shaping of consonants, design and positioning of vowels and other diacritic marks etc., and actually making a font file. Obviously, the author is not claiming copyright on existing sources or letter shapes, rather on each font substantially as a whole, inasmuch as applicable.

About these fonts

- These fonts (named with prefix GGT-) are provided *as is*, subject to some restrictions, and with no warranty or liability.
- The fonts map character codes in the range 32-255 into letters and nonspacing diacritics. This is the old way of doing things, not the Unicode way.
- The zero-space accenting technique works well with Word, and pdf from Word, and with Firefox and Chrome, but not with earlier versions of Internet Explorer.
- See the user manuals (below, in pdf) for sample texts rendered and more information.
- The GGTAmos2 and GGTHosea2 fonts have vowels but not cantillation signs, which allows the letters themselves to be larger in the same vertical space, as less height is used.
- The GGTSinaiticusNac and P75Nac fonts have zero space characters where the -Acc equivalents have accents and other diacritics, so diacritics can be removed and restored simply by a font change. For other fonts, the diacritics must be removed by editing the textual document. Obviously, the Masoretic symbols are incongruous when used with some of the fonts, but their availability does no harm.

- Download the fonts by clicking and selecting *save* (not *open*, which just displays some characters in the font) and copying to your Fonts directory. On some browsers you need to right click and save the target.

Conditions of use for ...

GGTAmos GGTAmos2 GGTHosea GGTHosea2 GGTIvrit
GGTRashi GGTSamaritan

The GGT- fonts named immediately above are Copyright © 2009 by Graham G. Thomason. Anyone is permitted to install and use the immediately abovementioned GGT- fonts without prior notification, permission, compensation to the holder or any other restrictions. The holder shall not be held liable for any consequences of use of the fonts. Though not required, it would be appreciated if acknowledgment is made, e.g. as follows:

This document uses the GGTAmos.ttf font, available from www.FarAboveAll.com

Conditions of use for ...

GGTDSIa GGTSiloam

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This document uses the GGTDSIa.ttf font, available from www.FarAboveAll.com

More about these fonts

Unlike the Greek GGT- fonts, these fonts are not quite interchangeable by simply changing the font used to render the same text. That is because there are not enough characters in the 32-255 range available to supply each consonant with its own diacritics, e.g. vowels, the dageš. So characters share vowel and dageš codes, and the groups of characters that share any one code are not the same across the fonts. These fonts are, however, consistent across consonant codes.

Before you tell the author that Samaritan etc. were never written with Masoretic signs: *he knows that*. No-one is forcing you to use these signs; they are there to hybridize the text with if you want them.

This manual mainly describes the GGTAmos font, and a variant GGTAmos2. GGTAmos2 is consonant and vowel compatible with GGTAmos, and by sacrificing supralinear accents (but not holem), it is a larger letter for a given size in points, and so is better suited to use in conjunction with Roman text. GGTHosea is compatible in every respect with GGTAmos, and GGTHosea2 with GGTAmos2. The other fonts illustrated above are similar in design principles, but consonants may take different dagešes and different diacritics to those in other fonts (mainly because the widths are not as in GGTAmos). They are summarised further on.

Rationale for coding choices

- The use of <>& has been avoided, as these are significant in HTML and XML. In the font they are rendered as <>.
- The symbol ~ (in the font currently: ~) has been reserved as an escape character.
- Of codes below 127, the following is available for assignment in GGTAmos:]

- Keys such as “0192” mean enter ALT/0192 in Microsoft word processors. The character table (exhibited later) shows the mapping to the ASCII codes.
- We use a simple ratio for the ratio of narrow to wide characters in GGTAmos / GGTAmos2 / GGTHosea / GGTHosea2. (In the other fonts we abandoned the restriction to a simple ratio). The following table shows some possibilities and our choice.

Ratio	Decimal	Glyph points	HCF	Remarks
1/2	0.500	500 : 1000	500	Would be as BHS, but extra space would frequently be needed
4/7	0.57143	572 : 1001	143	Too narrow for punctuation
3/5	0.600	600 : 1000	200	Too narrow for punctuation
8/13	0.61538	616 : 1001	77	
5/8	0.625	625 : 1000	125	We choose this. Width 1000 is convenient.
7/11	0.63636	637 : 1001	91	
2/3	0.66667	666 : 999	333	Narrow characters appear a little too wide

We want to be able to create and use a non-Unicode file, with 8-bit characters in the 32-255 range. Microsoft Word converts these to various Unicode values, but we cannot use some values of the 128-255 range (so we avoid them).

Courier New representation of 0128-0255	Remarks
€□?????????□ž□□?????????□ž?	128-159 80 ^{hex} -9F ^{hex} avoid
ı ç £ ¤ ¥ ¦ § ¨ © ª « ¬ ® ¯ ° ± ² ³ ´ µ ¶ · ¸ ¹ º » ¼ ½ ¾ ¿	160-191 A0 ^{hex} -BF ^{hex} ok . 0160 = nonbreaking space 0172 = soft hyphen
À Á Â Ã Ä Å Æ Ç È É Ê Ë Ì Í Î Ï Ð Ñ Ò Ó Ô Õ Ö × Ø Ù Ú Û Ü Ý Þ ß	192-223 C0 ^{hex} -DF ^{hex} ok
à á â ã ä å æ ç è é ê ë ì í î ï ð ñ ò ó ô õ ö ÷ ø ù ú û ü ý þ ÿ	224-255 E0 ^{hex} -FF ^{hex} ok

Transliteration convention (not the font coding!) used in this document

We have used a somewhat informal transliteration, with letters available in a Unicode font.

ת	ת	ש	ש	ר	ק	צ	פ	פ	ע	ס	נ	מ	ל	כ	כ	י	ט	ח	ז	ו	ה	ד	ד	ג	ג	ב	ב	א
t	t	š	š	r	q	š	f	p	ʕ	s	n	m	l	k	k	y	ṭ	ḥ	z	w	h	d	d	g	g	v	b	ʔ

Notes:

- Unicode: ʔ=02C0 ʕ=02C1 Ḥ=1E24 ḥ=1E25 Ṭ=1E6C ṭ=1E6D Š=1E62 š=1E63 Ś=015A ś=015B Ṣ̌=0160 ṣ̌=0161.
- We retain the traditional English spellings *aleph*, *kaph*, *qoph*.
- A dageš forte is transliterated by doubling a consonant.
- Mater lectionis h, y and w are not transliterated, but mater lectionis aleph is.
- A furtive vowel is written after the guttural consonant (e.g. רביע = reviaʕ).

In stricter transliteration:

- The *bgdkpt* letters would always be transliterated in hard form.
- Vowel lengths and šewa would be distinguished
- Mater lectionis h, y and w would be indicated by a circumflex vowel: רֶה = bâ.

GGTAmos Coding Summary

Consonants: Insert **dageš** and **rafe** to the **right** of the consonant.

ץ	ף	ן	ם	ך	ת	ש	ר	ק	צ	פ	ע	ס	נ	מ	ל	כ	י	ט	ה	ז	ו	ו	ה	ד	ג	ב	א
C	P	N	M	K	t	#	r	q	c	p	(	s	n	m	l	k	y	+	x	z	w	w	h	d	g	b)
ץ	ף	ן	ם	ך	ת	ש	ר	ק	צ	פ	ע	ס	נ	מ	ל	כ	י	ט	ה	ז	ו	ו	ה	ד	ג	ב	א
^	3	^	@	@	Z	3	@	%	4	Z	5	@	@	Z	%	%	5	@	@	%	[	3	@	%	@	%	^

Šin dots/holem, numerals and rafe.

ן	ש	א	ל	ש	ש	ש	ש	ג	ב	ו	ו
Gn	0254#	)\$	`O|	`Oo#	o#\$\$	#\$	o#	}	{	ow	Gw

↑ vocalic
 ↑ consonantal

↑ vocalic
 ↑ consonantal

Vowels

- Insert vowel/rafe to the **right** of consonant, except o and O, which are to the **left**.
- **lamed** and **šin** have a special "o" only. Note that **לא**, **מא** etc. can also be produced.
- Further notes on vowels are given following the table.

	sewa	U	O	I	E	A
wide	בּ בְ	בּ בְ בִ	בּ בְ בִ	בּ בְ בִ	בּ בְ בִ	בּ בְ בִ
	; ;	u u |u	/ f f o	i i |i	v e e ' '	j a a f f
			0251 0251			
ק	קּ קֶ	קּ קֶ קִ	קּ קֶ קִ	קּ קֶ קִ	קּ קֶ קִ	קּ קֶ קִ
	0 T	U Q Q	2 B F o	i L \L	V S e D ' '	J R a B f
			0246 0252			
nar-row	בּ בְ	בּ בְ בִ	בּ בְ בִ	בּ בְ בִ	בּ בְ בִ	בּ בְ בִ
	0 T	U Q |Q	2 B F o	I L |L	V S E D H	J R A B F
			0246 0252			
ך	ךּ כֶ כִ	ךּ כֶ כִ	ךּ כֶ כִ	ךּ כֶ כִ	ךּ כֶ כִ	ךּ כֶ כִ
	@; 7	6	0164 1 o	i	0165 0170 0174	0166 0167 @= 1
			0245			
ל				לּ לֶ		לּ לֶ
				`O		W
ו	וּ וֶ			וּ וֶ		
	0			Gw		

Further notes on vowels

- O may require an additional ` (1/8 space). Further on, a table shows when this is necessary.
 - Choose between:
 - wide character (can take a punctuation mark without squeezing).
 - narrow character (unsqueezed, for use without punctuation): גוויינג
 - narrow squeezed (squeezed up to the right to make room for cantillation to the left)
- Examples are with *munah* (=Y or 8), e.g. in full בּ YbF גּ YgB בּ 8qB.
- **Qof** is sometimes treated as a *narrow* character, or a special character; this is essential for composite-sewa and subscript-massoretic-accents
 - **Qameš ḥatuf** can be distinguished from **Qameš**: בּ בּ גּ גּ גּ גּ ק ק
 - For **vocal waw**, use ו (Gw). For **consonantal waw**, use װ (ow).

Dageš positioning detail

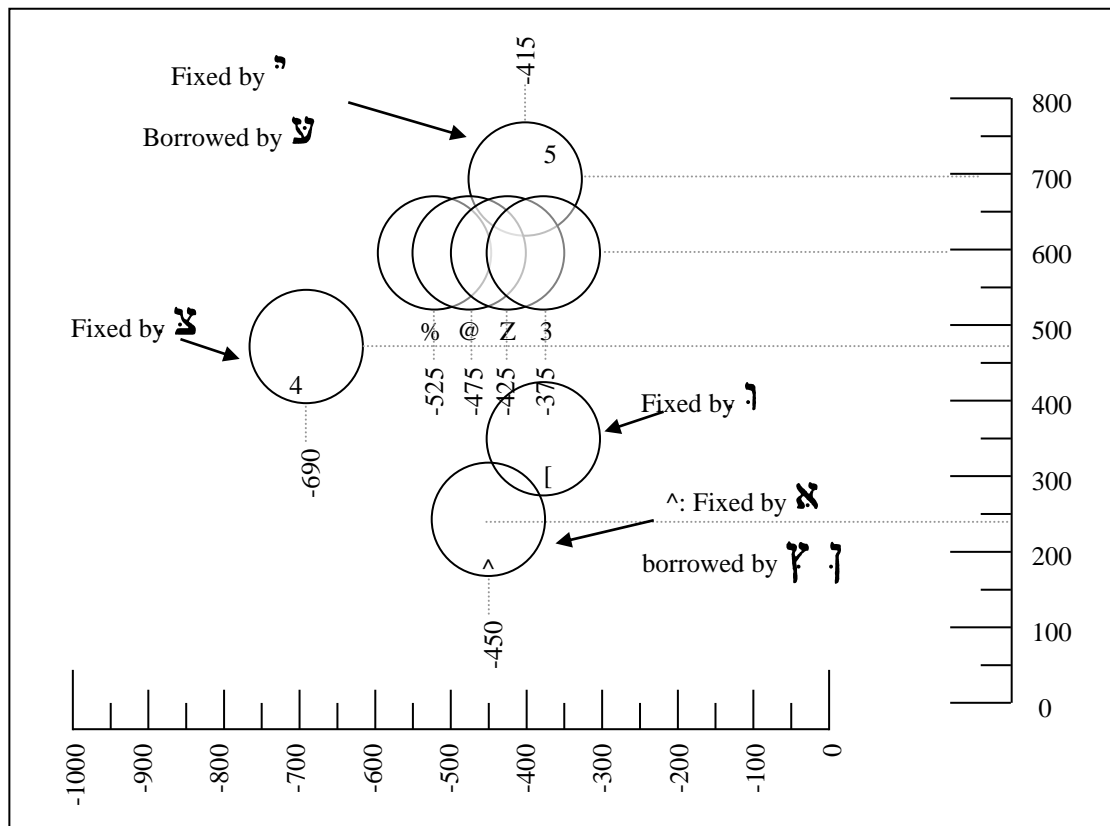


Figure 1. Dageš positioning detail

The dagešes at 600pts vertical

%	@	Z	3
Needed by בּ	Central in הּ	Z: Needed by טּ	Fixed by שּ
Shared by ף etc.	Shared by גּ etc.	Shared by ךּ etc.	Shared by ף ן

Delicate positioning cases

- "o" cannot be moved to the left on **שׁ** or the right on **גּ**.
- "O" cannot be moved to the right on **שׁ** (also hardly on **לּ**) or the left on **שׂגּ**.

Dilatables

Except for aleph, these use (left-half) (mid-joiner) (right-half) letters

1		1 ¹ / ₈		1 ² / ₈		1 ⁴ / ₈		2		2 ⁴ / ₈		3	
א	)	-	-	-	-	א	0233	א	0235	א	0236	א	0237
הה	h 0224 0226	ה	0224 0225 0226	ה	0224 (2x) 0226	ה	0224 (4x) 0226	ה	0224 (8x) 0226	ה	(12x)	ה	(16x)
לל	l 0231 0232	ל	0231 0225 0232	ל	0231 (2x) 0232	ל	0231 (4x) 0232	ל	0231 (8x) 0232	ל	(12x)	ל	(16x)
םם	M 0248 0250	ם	0248 0249 0250	ם	0248 (2x) 0250	ם	0248 (4x) 0250	ם	0248 (8x) 0250	ם	(12x)	ם	(16x)
תת	t 0228 0229	ת	0228 0225 0229	ת	0228 (2x) 0229	ת	0228 (4x) 0229	ת	0228 (8x) 0229	ת	(12x)	ת	(16x)

1	4	
א	א	0239
הה	הה	(24x)
לל	לל	(24x)
םם	םם	(24x)
תת	תת	(24x)

For modern Hebrew

Comma (⁴ / ₈ !)	ב,	,
Full stop (⁴ / ₈ !)	ב.	.
Question mark (⁷ / ₈ !)	ב?	?
Tilde (useful as an escape character)	ב~	~

Exclamat. mark (⁴ / ₈ !)	ב!	!
dash (⁵ / ₈)	ג-ג	_ us
etc (⁵ / ₈)	ל"ה	"
apostrophe	ל'	0208

Masoretic punctuation / cantillation (1)

Common nonzero width (but there are others too)

	BHS Nr	MC Nr		key		BHS Nr	MC Nr		key
maqfep (⁵ / ₈)	-	-	גַּגְ	-	space (⁵ / ₈)	-	-	בּ בּ	sp
sof pasuq (⁵ / ₈)	-	00	גַּגְ :		nonbrk sp (⁵ / ₈)	-	-	בּ בּ	0160
paseq (³ / ₈ !)	-	05	גַּ	0192	nbrk sp (¹ / ₈)	-	-	בּבּ	` bq

Masoretic punctuation / cantillation (2)

Other signs:

Enter to the *left* of the character unless otherwise noted (so it can often share for wide and narrow chars)

C=Communes P=Poetici (BHS notation)

The *subscript* punctuation needs a special form to go with ק̣.

The *superscript* punctuation needs care in positioning w.r.t. ל̣, ש̣.

We show a collocated vowel with the punctuation where appropriate.

Shading here indicates a sign that has already occurred.

Where two diacritic symbols are entered on the same side of a character, they are best in left-to-right order.

ב̣̣	o0194b	rather than	ב̣̣	0194ob
-----	--------	-------------	-----	--------

Description	BHS Nr	MC Nr	Narrow		Wide		Special		Remarks
			Narr Char	Key	Wide Char	Key		Key	
Meteg left	-	75	גַּגְ	|	בּבּ	/	ק̣̣	\	
Meteg right		95	גַּגְ	0223	בּבּ	0255	ק̣̣	0255	key <i>right</i>
Meteg medial MC coding is G : A35 etc. =Silluq, C1/MC75		35	גַּגְ	0227 ~	בּבּ	0240 ~	ק̣̣	0240 ~	key <i>right</i> includes sewa. various spacings (see separate table)
			גַּגְ	0227 `	בּבּ	0240 `	ק̣̣	0240 `	

DISJUNCTIVE COMMUNES

Silluq =Meteg left, C--/MC75	C1	75	גַּגְ	|	בּבּ	/	ק̣̣	\	Sof pasuq is specified separately
?Atnah	C2	92	גַּגְ	X	בּבּ	X	ק̣̣	9	

Segolt'a	C3	01	גֹּלְטָא	0193	גֹּלְטָא	same	שֵׁל	same	postpos, W= ³ / ₈
Šalšelet	C4	65	שֵׁלֶט	0194	שֵׁלֶט	same	שֵׁלֶט	same	
Zaqef gadol	C5	80	גֹּדֹל	0195	גֹּדֹל	same	שֵׁלֶט	same	
Zaqef qaton	C6	85	גֹּדֹל	0196	גֹּדֹל	same	שֵׁלֶט	same	
Revia ^ç	C7	81	גֹּדֹל	0197	גֹּדֹל	same	שֵׁלֶט	same	
Ṭifḥa ^ç	C8	73	גֹּדֹל	0198	גֹּדֹל	0198	קֹדֶשׁ	0230	
Zarqa ^ç	C9	02	גֹּדֹל	0199	גֹּדֹל	same	שֵׁלֶט	same	postpos, W= ³ / ₈
Pašta ^ç (postpos part)	C10	03	גֹּדֹל	0200	גֹּדֹל	same	שֵׁלֶט	same	postpos, W= ³ / ₈
Pašta ^ç (medial part) =Azla ^ç , C24/MC63	C10	33	גֹּדֹל	0213	גֹּדֹל	same	שֵׁלֶט	same	
Yetiv	C11	10	גֹּדֹל	0209	גֹּדֹל	same	קֹדֶשׁ	same	prepos key right with ¹ / ₈ spaces
Tevir	C12	91	גֹּדֹל	0202	גֹּדֹל	0202	קֹדֶשׁ	0234	
Gereš / Ṭeres	C13	61	גֹּדֹל	0203	גֹּדֹל	same	שֵׁלֶט	same	
Garšaim	C14	62	גֹּדֹל	0204	גֹּדֹל	same	שֵׁלֶט	same	
Pazer	C15	83	גֹּדֹל	0205	גֹּדֹל	same	שֵׁלֶט	same	
Pazer gadol/ Qarne para	C16	84	גֹּדֹל	0206	גֹּדֹל	0238	שֵׁלֶט	0238	only 16 occurrences
Teliša ^ç gedola medial	C17	44	גֹּדֹל	0219	גֹּדֹל	same	שֵׁלֶט	same	
Teliša ^ç gedola prepositive	C17	14	גֹּדֹל	0207	גֹּדֹל	same	שֵׁלֶט	same	prepos, W= ³ / ₈ key right
Legarmeh =Munaḥ, C19/MC74	C18	74	גֹּדֹל	Y	גֹּדֹל	Y	קֹדֶשׁ	8	Paseq (C--/MC05) specified separately

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Munaḥ	C19	74	גֹּדֹל	Y	גֹּדֹל	Y	קֹדֶשׁ	8	
Mahpak/ Mehuppak	C20	70	גֹּדֹל	0209	גֹּדֹל	0209	קֹדֶשׁ	0241	
Mereka ^ç	C21	71	גֹּדֹל	0210	גֹּדֹל	0210	קֹדֶשׁ	0242	
Mereka ^ç kefula	C22	72	גֹּדֹל	0211	גֹּדֹל	0211	קֹדֶשׁ	0243	
Darga ^ç	C23	94	גֹּדֹל	0212	גֹּדֹל	0212	קֹדֶשׁ	0244	


























Azla' =Pašta' (medial), C10/MC63	C24	63	גַּלְגַּל	0213	בְּב	same	שֵׁל	same	
Teliša' qeṭanna medial	C25 (i)	24	גַּלְגַּל	0216	בְּב	same	שֵׁל	same	
Teliša' qeṭanna postpositive	C25 (ii)	04	גַּלְגַּל	0214	בְּב	same	שֵׁל	same	postpos, W= ³ / ₈
Galgal	C26	93	גַּלְגַּל	0215	בְּב	0215	קַק	0247	
Ma'yela' = Ṭifḥa', C8/MC73	C27	73	גַּלְגַּל	0198	בְּב	0198	קַק	0230	

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




Silluq (=C1) =Meteg left, C--/MC75	P1	35	גַּלְגַּל		בְּב		קַק	\	Sof pasuq is specified separately
ʿOle (weyored)	P2	60	גַּלְגַּל	0217	בְּב	same	שֵׁל	same	
Atnaḥ =C3/MC92	P3	92	גַּלְגַּל	X	בְּב	X	קַק	9	
Revia ^ʿ =C7/MC81	P4	81	גַּלְגַּל	0197	בְּב	same	שֵׁל	same	
(Revia ^ʿ =C7/MC81) Mugraš (new)	P5	(81) 11	גַּלְגַּל	(0197) 0218	בְּב	same	שֵׁל	same	prepos, W= ³ / ₈ key <i>right</i>
Šalšelet gedola =C4/MC65	P6	65	גַּלְגַּל	0194	בְּב	same	שֵׁל	same	Paseq (C--/MC05) specified separately
Šinnor/Zarqa =C9/MC02	P7	02	גַּלְגַּל	0199	בְּב	same	שֵׁל	same	postpos, W= ³ / ₈
Revia ^ʿ qaṭon =C7/MC81	P8	81	גַּלְגַּל	0197	בְּב	same	שֵׁל	same	
Dehi	P9	13	גַּלְגַּל	0198	בְּב	same	קַק	same	prepos, W= ³ / ₈ key <i>right</i> with ¹ / ₈ spaces
Pazer =C15/MC83	P10	83	גַּלְגַּל	0205	בְּב	same	שֵׁל	same	
Mehuppak Legarmeh =C20/MC70	P11	70	גַּלְגַּל	0209	בְּב	0209	קַק	0241	Paseq (C--/MC05) specified separately
Azla' Legarmeh =C24/MC63 =C10/MC63	P12	63	גַּלְגַּל	0213	בְּב	same	שֵׁל	same	Paseq (C--/MC05) specified separately

**CONJUNCTIVE
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Munah =C19/MC74	P13	74	גַּלְגַּל	Y	בְּב	Y	קַק	8	
Mereka' =C21/MC71	P14	71	גַּלְגַּל	0210	בְּב	0210	קַק	0242	
Illuy	P15	64	גַּלְגַּל	0220	בְּב	same	לֵל	same	

Tarḥa [?] =C8/MC73	P16	73		0198		0198		0230	
Galgal =C26/MC93	P17	93		0215		0215		0247	
Mehuppak/ Mahpak =C20/MC70	P18	70		0209		0209		0241	
Azla [?] =C24/MC63 =C10/MC63 =P12/MC63	P19	63		0213		same		same	
Šalšelet qeṭanna =C4/MC65 =P6/MC65	P20	65		0194		same		same	
Šinnorit	P21	82		0221		same		same	
Circule-over		[52]		0222		same		same	key left
Circule-under		[53]		0201		same		same	key left
Test character				0132					

Medial and Pre/Postpositive table

Medial	Pre/Post-positive
(Segolta [?] never medial)	Segolta [?] C3/MC01 
Pašta [?] -medial C10/MC33 =Azla [?] =C24/MC33 	Pašta [?] -postpositive C10/MC03 
Gereš / Ṭeres C13/MC61 	(Revia [?]) Mugraš P5/MC81 
Teliša [?] qeṭanna medial C--/24 	Teliša [?] qeṭanna postpositive C25/MC04 
Teliša [?] gedola medial C--/MC44 	Teliša [?] gedola prepositive C17/MC14 
Mehuppak C20-P18/MC70 	Yetiv C11/MC10 (˘0209˘˘) 
Ma'yela [?] / Ṭifḥa [?] C8-C27/MC73 	Deḥi P9/MC13 (˘0198˘˘) 
Šinnorit P21/MC82 	Šinnor/Zarqa [?] P7-C9/MC02 

Points to note:

- Segolta[?] is an independent character including spacing.
- Šinnor has its own character including spacing (since Šinnorit is rather squeezed).
- Prepositive superscripts have their own character including spacing, since otherwise the sign, placed at the right of the consonant, would be too far to the right:  .

- Postpositive superscripts have their own spacing, since with 5/8 space on which to place the sign, there would either be no soft space between words: גּוֹיִם , or with soft space there would be 2/8 extra space: גּוֹיִם .
- **Prepositive subscripts share with medials:** Yetiv with Mehuppak, and Dehi with Ma'yela'.
- Postpositive subscripts - none occur.

Example of meteg with compound sewa

Job 7:11= אֲדַבְרָהּ MC: 13):A35DAB.:RFH

Double vowels

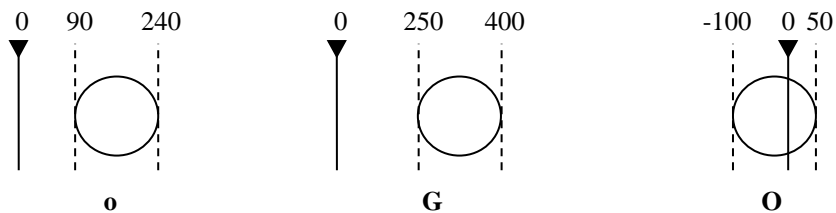
- ירושלים MLXyBl#wry or ירושלים M`LXyBl#wry
Psalm 137:5 MC: Y:75RW.\$FLF81IM

Low stress mark: 0253

For use where the only superscript sign needed is a stress mark: לֹבֵן .

The vowel "O" and supralinear dots

All o's are entered *to the left of the consonant*. Any O has a width of 150 units.
The o is nearer the right, 90–240 units (normal use; there is still room for šalšelet etc.)
The G is similar to the "o", but is a little further to the right.
The O is nearer the left, -100–50 units, used with backquote is 1/8 spacing=125 units.



Use o with all consonants (incl ש) except vocal-ו, ל and ש (but use o to make this šin-dot).

Use G with vocal waw, as in לו (but use o in consonantal waw, as in מצות, commandments, and O preceding consonantal waw, as in לנה, lending).

Use O with or without the backquote (1/8 space) on ל and ש (except where ḥolem is thrown).

Use \$ for the šin-dot, (and aleph-right-dot, i.e. a *thrown* ḥolem).

Note the triple dot in שש (šoš).

Thrown ḥolem - what we could do and what we do:

Source and target	Possible?	Un thrown	Thrown	Throw?
any to wide	Possible if not narrow rafe; superscript cantillation acceptable	בב	בב	No

any to narrow	Possible if no rafe and no superscript cantillation	גג	גג	No
any to lamed	Always possible, because lamed is wide	גל	גל	No
any to šin	Never possible (if we are to see two dots)	גש	גש	No

any to aleph *Always possible: aleph does not take rafe*

wide to aleph	Throwing looks nicer	בא	בא	Yes
narrow to aleph	Throwing looks nicer	גא	גא	Yes
lamed to aleph	Throwing looks nicer	לא	לא	Yes
aleph to aleph	The first aleph can hold the ḥolem nicely	אא	אא	No
šin to aleph	Throwing avoids a 1/8 space	שא	שא	Yes
šsin to aleph	As BHS: השאַבַּת Gen 24:11	שא	שא	No
vocal waw to aleph	The ḥolem belongs with the waw	וא	וא	No
consonantal waw to aleph	Probably does not occur	וא	וא	No

any to šin *Always possible: šin does not take rafe*

wide to šin	<u>Not</u> throwing avoids a ש, as BHS: Is 3:6 יתפֿשׁ	בש	בש	No
narrow to šin	<u>Not</u> throwing avoids a ש	גש	גש	No
lamed to šin	<u>Not</u> throwing avoids a ש	לש	לש	No
aleph to šin	<u>Not</u> throwing avoids a ש	אש	אש	No
šsin to šin	Throwing avoids a 1/8 space	שש	שש	Yes
šsin to šin	ש either way (šo/oś). No throw, as below.	שש	שש	No
vocal waw to šin	<u>Not</u> throwing avoids a ש	וש	וש	No
consonantal waw to šin	<u>Not</u> throwing avoids a ש	וש	וש	No

Notes

- For when to insert an extra 1/8 space with O, and otherwise, see separate section.
- We throw whether or not a receiving letter has a ḥolem: הַרְאֵת [Dt 3:21]

Ḥolem combination table

In the tables below:

- MC1 is the basic MC coding with cantillation expunged.

- MC2 is the full MC coding of the verse cited.
- In the *read* rows, we use *v* to indicate a consonantal waw, *w/u* for a vocalic waw.
 - We distinguish vocalic/consonantal waw by the position of the ḥolem. Cf. Prov 22:7 לְנֹהַל (not לְנֹהַל or, worse, לְנֹהַל), Dan 5:6 זְיוֹהֵי (consonantal, ḥ=ow), בּוֹ (vocalic, ḥ=Gw) and עֹן (consonantal). [In our conversion of the eBHS, we deduce whether a waw is consonantal or vocalic and render accordingly].
- Thrown ḥolem shown shaded (in the *key* cell).

after before	<i>wide</i>	<i>narrow</i>	<i>lamed</i>	<i>aleph</i>	<i>šin</i>	<i>šin</i>
<i>wide</i>	בִּקֶּר	הַשִּׁיבֹנוּ	כִּנְבֹל	יִבְאוּ	עֲשֵׂה	יִבְשֵׁת
key	qob	nob	lob	)\$b	o#o(	#\$ob
read	boq	bon	bol	boʔ	(oś	boš
MC1	BOQ	BON	BOL	BO)	(O&	BOŠ
MC2	BO73QER	H:ESIYBO71NW.	K.I/N:BO70L	YFBO61)W.	(O70&EH	Y:BO71SET
verse	Gen 1:5	Gen 44:8	Is 34:4	Gen 6:4	Gen 1:11	Gen 8:7
<i>narrow</i>	וַיִּסְגֹּר	גִּזְזִי	תִּגְזֹל	הַגְּאֵל	נִשְׂאִים	יִשֵּׁב
key	rog	zog	zog	)\$g	o#on	#\$oy
read	gor	goz	zol	goʔ	noś	yoš
MC1	GOR	GOZ	ZOL	GO)	NO&	YOŠ
MC2	WA:Y.IS:G.O71R	G.O75Z:AZ"70Y	T.IG:ZO71L	HA/G.O)"63L	NO75&.)I81YM	YOŠ"71B
verse	Gen 2:21	Gen 38:12	Gen 31:31	Gen 48:16	Gen 37:25	Gen 4:20
<i>lamed</i>	אֱלֹהִים	בְּאֵלָנִי	לְשַׁלֵּל	לֹא	לֵשׁ	שְׁלֵשִׁים
key	hOl	nOl	lOl	)\$l	o#Ol	#\$O`l
read	loh	lon	lol	loʔ	loś	loš
MC1	LOH	LON	LOL	LO)	LO&	LOŠ
MC2	);ELOHI92YM	B.:)"LON"71Y	LI/S:LO70L	LO63)	LO&	\$.LOŠI70YM
verse	Gen 1:1	Gen 13:18	Is 10:6	Gen 2:5	<i>no occur</i>	Gen 5:3
<i>aleph</i>	מְאֵרֶת	אֵן	שְׂאֵלָה	אֵא	אֵשׁ	בְּאֵשׁ
key	ro)	No)	lo)	)o)	o#o)	#\$o)
read	)or	)on	)ol	)o)	)oś	)oš
MC1	)OR	)ON	)OL	)O)	)O&	)OŠ
MC2	M:)OROT03?	)O73N?	\$.)O92L/FH	)O)	)O&	B.:)O70Š
verse	Gen 1:14	Gen 41:45	Gen 37:35	<i>no occur</i>	<i>no occur</i>	Amos 4:10
<i>šin</i>	מַעֲשֵׂתָא	שְׂנֵאִיר	שֵׁל	מִנְשָׂא	שֵׁשׁ	שֵׁשׁ
key	Oo#	nOo#	lOo#	)\$o#	o#o#	#\$`Oo#
read	śot	śon	śol	śoʔ	śoś	śoš
MC1	&OT	&ON	&OL	&O)	&O&	&OŠ
MC2	M"/(:A&O74T05	&ON):F75Y/W	&OL	MI/N.:&O75)	&O&	&OŠ
verse	Gen 18:25	Gen 24:60	<i>no occur</i>	Gen 4:13	<i>no occur</i>	<i>no occur</i>
<i>šin</i>	הַשְּׁהָם	לְלִשְׁנוֹ	וְלִמְשַׁלֵּ	הַשְּׂאֵבֶת	שֵׁשׁ	שֵׁשִׁים
key	ho#\$	no#\$	lo#\$	)o#\$	o#o#\$	#\$o#\$
read	šoh	šon	šol	šoʔ	šoś	šoš
MC1	SOH	SON	SOL	SO)	SO&	SOŠ
MC2	HA/\$.O75HAM	LI/L:SON/O92W	W:/LI/M:SOL03	HA/\$.O):ABO75T	SO&	-13SOŠAN.IYM
verse	Gen 2:12	Gen 10:5	Gen 1:18	Gen 24:11	<i>no occur</i>	Ps 45:1
<i>vocalic waw</i>	טוּב	עֲצֻבוּנָךְ	תּוֹלְדוֹת	הַלּוֹא	וּמְשׁוֹשׁ	אֲנוֹשׁ
key	bGw	nGw	lGw	)Gw	o#Gw	#\$Gw
read	ob	on	ol	o)	oś	oš
MC1	OWB	OWN	OWL	OW)	OW&	OWŠ
MC2	+O92WB	(IC.:BOWN/"74K:	TOWL:DO94WT	H:A/LO70W)	W./M:&O71W&	);ENO92WŠ
verse	Gen 1:4	Gen 3:16	Gen 2:4	Gen 4:7	Is 8:6	Gen 4:26

after before	<i>vocalic waw</i>
<i>wide</i>	בו
key	Gwb
read	bo
MC1	BOW
MC2	BO73W
verse	Gen 1:11
<i>narrow</i>	הַרְגוּ
key	Gwg
read	go
MC1	GOW
MC2	H:ARF/GO73W
verse	Gen 4:25
<i>lamed</i>	לוֹ
key	Gwl
read	lo
MC1	LOW
MC2	L./O71W|l
verse	Gen 2:18
<i>aleph</i>	אוֹר
key	Gw)
read	)o
MC1	)OW
MC2	)O75WR
verse	Gen 1:3
<i>śin</i>	לַעֲשׂוֹת
key	Gwo#
read	śo
MC1	&OW
MC2	LA/(:A&O75WT
verse	Gen 2:3
<i>šin</i>	פִּישׁוֹן
key	Gw#\$
read	šo
MC1	\$OW
MC2	P.IY\$O92WN
verse	Gen 2:11
<i>waw</i>	וֹ
key	wow
read	ov
MC1	OWW (?)
MC2	OWW (?)
verse	<i>no occur(?)</i>

Additional combinations

š/š -o- š/š	וּמְשׁוֹשׁ	שׁוֹשׁ	שׁוֹשְׁתִּי	שׁוֹשְׁנִים	
key	o#Gw	#\$Gwo#	o#Gw#\$	#\$Gw#\$	
read	śoś	śoš	šoś	šoš	
MC1	&OW&	&OW\$	\$OW&	\$OW\$	
MC2	W./M:&O71W&	&OW\$	\$OW&"80TIY	\$OW\$AN.I64YM	
verse	Is 8:6	no occur	Is 10:13	Ps 69:1	

conson. waw	o+cons	o+cons+o	cons+o (1)	cons+o (2)	cons2+o
	לֹוּהַ	מוֹ	זִוְהִי	מְצֹוֹתִי	בְּצִוְתוֹ
key	w`Ol	owom	ow	ow	ow[
read	lov	movo	zivohi	vo	vvo
MC1	LOW	OWO	WO	WO	WO
MC2	11LOWE81H	MOWO	ZIYW/O74HIY	MIC:WOT/A73Y	B.:CAW.OT/OW03
verse	Prov 22:7	no occur	Dan 5:6	Gen 26:5	Ezek 10:6

double waw	voc+cons	cons+voc			cons2+voc
	לוֹוְהַ	בְּצִוְוּן			הִוְוֹת
key	wGw	Gww			Gww3
read	loveh	vo			havvot
MC1	OWW (?)	WOW			WOW
MC2	LOWWEH	B.:(FWO71WN			HA60W.O71WT
verse	no occur(?)	Ps 51:7			Ps 5:10

waw=v, no o	no o: initial	no o: medial	no o: final		
	וּשְׁתִּי	רְוִיָּה	וּיְצוֹ		
key	wA	wF	aw		
read	va	va	av		
MC1	WA	WA	AW		
MC2	WAS:T.I74Y	R:WFYF75H	WA:Y:CAW03		
verse	Est 1:9	Ps 23:5	Gen 2:16		

waw=u					
	תְּוּ	יְקוֹו	וּיְצוֹו	וּו	
key	w3	w3w	w3w3	ww3	
read	u	wu	vvu	uv	
MC1	W.	WW.	W.W.	W.W	
MC2	TO33HW.03	YIQ.FW63W.	WA:Y:CAW.85W.	W.W	
verse	Gen 1:2	Gen 1:9	Gen 50:16	no occur ?	

- Revia^f is placed on the waw in לוֹוְהַ; BHS is more like לוֹוְהַ (produced here using a split וּו).

When to use an extra 1/8 space:

			MC
<p><i>After an O</i>, (so after lamed-O or šin-O) <i>Before narrow superscript</i> (narrow character with superscript infix cantillation)</p>	<p>Gen 14:13 Prov 24:31</p>	<p>בְּאֵלֶי בְּאֵלֶי קִמְשׁוֹיִם קִמְשׁוֹיִם</p>	<p>B.:/)"75LON"61Y w. šalšelet 65 QIM.:&ONI81YM (nettles) w. šalšelet 65</p>
<p><i>After an O</i> <i>Before narrow rafe</i> (narrow character with rafe)</p>	<p>rafe not explicit as supplied in eBHS</p>	<p>לֹג שֹׁג</p>	<p>LOG, &OG,</p>
<p><i>After an O</i>, (so after lamed-O or šin-O) <i>Before a šin</i>:</p>	<p>Gen 5:3 no occur. with šin</p>	<p>שְׁלֵשִׁים שֵׁשׁ</p>	<p>\$.LO\$!70YM &O\$</p>
<p><i>After subscript cantillation</i> <i>Before narrow or qoph subscript</i> (narrow or qoph character with subscript cantillation, i.e. squeezed). We do not normally expect to see successive syllables with cantillation, but it occurs occasionally.</p>	<p>Ps 13:6 no occur.</p>	<p>יִגְלֶה בְּקֶן</p>	<p>YF70G"71L BE74QE74</p>
<p><i>After subscript cantillation</i> <i>Before final kaph</i></p>	<p>Gen 2:14</p>	<p>קֶהֱלֶךְ</p>	<p>HA75HOL"73K:</p>
<p><i>After subscript cantillation</i> <i>Before final nun</i></p>	<p>Gen 1:17</p>	<p>וַיִּתֵּן וַיִּתֵּן</p>	<p>VAY.IT."71n with Munaḥ</p>
<p><i>After subscript cantillation</i> <i>Before final pe</i></p>	<p>Gen 1:20</p>	<p>יְעוֹפֵף</p>	<p>Y:(OWP"74P</p>
<p><i>After subscript cantillation</i> <i>Before narrow or qoph composite sewa</i></p>	<p>only occ. Job 34:10</p>	<p>אֲנֹשִׁי</p>	<p>)A71N:A\$"71Y]3 (CCAT, not BHS)</p>
<p><i>After subscript cantillation</i> <i>Before meteg-right</i></p>	<p>no occur.</p>	<p>בְּבִטָּה</p>	<p>BF74BF35</p>
<p><i>After subscript cantillation</i> <i>Before a compound sewa with medial meteg.</i> Various spacings needed ($\frac{1}{8}$, $\frac{2}{8}$, $\frac{3}{8}$ depending on preceding signs), but there are no occurrences except at the start of a word, where we include $\frac{1}{8}$ space, (here followed by $\frac{1}{8}$ dehi $\frac{1}{8}$ $\frac{1}{8}$).</p>	<p>no nonleading occur. Job 7:11</p>	<p>קִבְּבִי אֲדַבְּרָה</p>	<p>G:A35 13):A35DAB.:RFH</p>

With composite sewa on narrow/qoph with meteg left	no occur.	גִּי	G:A75 two 1/8 sp. needed
Do not insert two spaces if a combination of the above holds.		לִי לִי שִׁי שִׁי	LOB,65 LOG,E65 LOB,65 LOG,E65

No need for 1/8 space in the following cases:

			MC
Ordinary use of O:	Gen 1:1	אֱלֹהִים	)E:LOHI92YM
After subscript cantillation Before wide subscript (wide character with subscript cantillation).	Gen 36:13	אֱלֹהֵי	)"74L.E74H]1
After an O Before wide rafe (wide character with rafe) But rafe is not explicit as supplied in eBHS.	no occur. in eBHS	לֵב שֵׁב	LOB, &OB,
After subscript cantillation Before wide composite sewa	Gen 18:6	הָאֱלֹהִים	HF)O73H:EL/FH
After subscript cantillation Before wide/narrow ordinary sewa	Gen 1:5	לֵילָה	LF92Y:LFH
With composite sewa on wide with meteg left	Job 22:4	הַמִּירְאָתָיִךְ	13H:A75/MI/Y.IR:)F74T/:KF
After final nun with qames	Gen 19:33	וַתִּשְׁקֵן	WAT.A\$:QE94YN F

Summary of MC codes for cantillation w.r.t. 1/8 spacing (excludes cantillation with its own space):

Meteg: left=75, medial=35, right=95

Superscript: 33 44 60 61 62 63 64 65 80 81 82 83 84 85

Subscript: 70 71 72 73 74 91 92 93 94

Space removal

A 1/8 space (or more) can be removed if a space or maqqef precedes a dehi or yetiv, e.g.

Job 23:2 גַּם־הַיּוֹם or גַּם־הַיּוֹם.

Dimensions

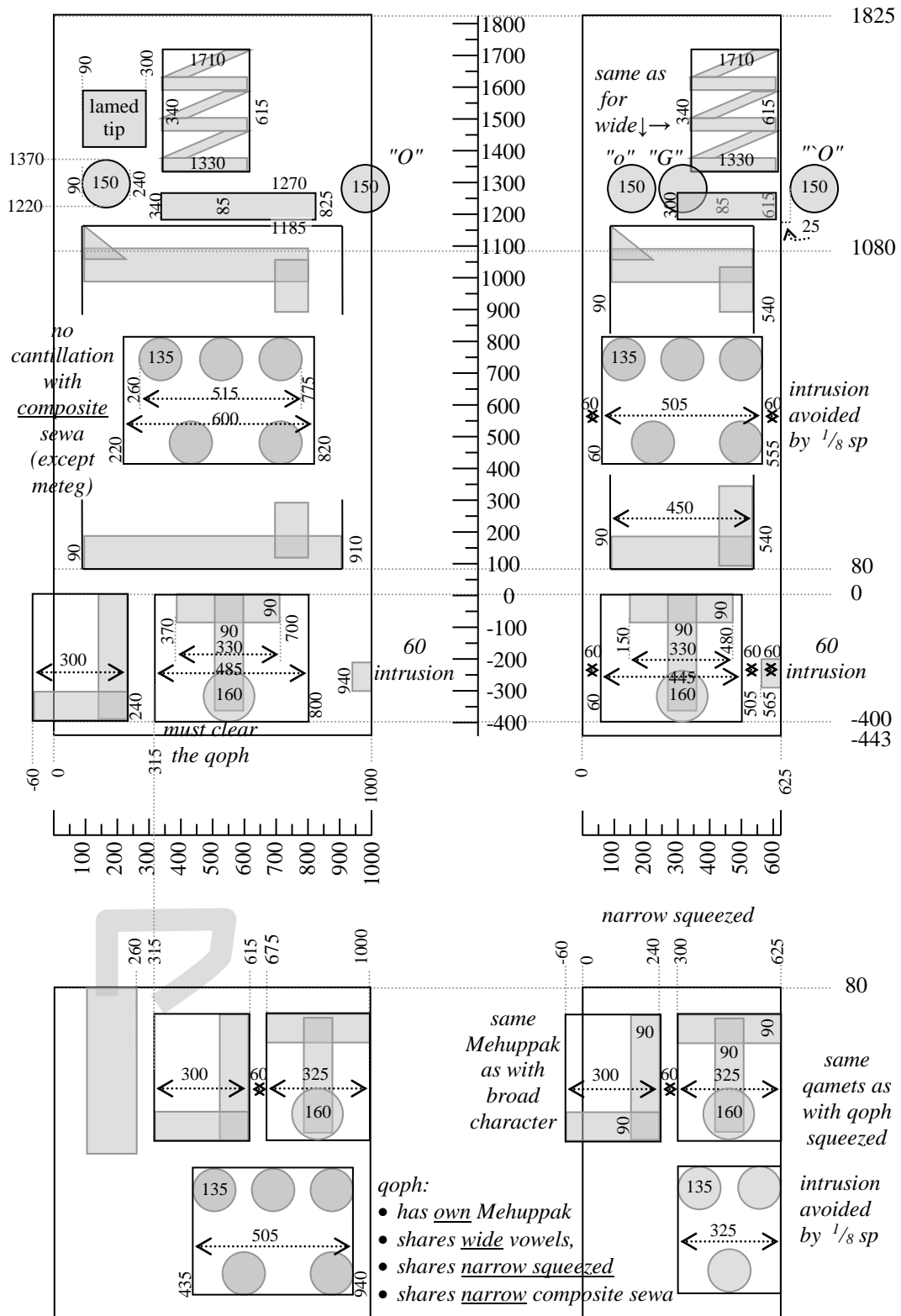


Figure 2. Principal character dimensions

Font metrics

The metrics are aligned with those of Times New Roman (v2.82) as much as possible.

Ascender	1825
Descender	-443
→Total height	2268

Line Gap	87
Units per em: 2048	2048

Metrics of GGTAmos2 and GGTHosea2

GGTAmos2 and GGTHosea2 are intended for use where no cantillation is required, so the character height can be reduced. GGTAmos2/GGTHosea2 are as GGTAmos/GGTHosea, except that the fonts have been adjusted follows:

- A low stress symbol is provided

ב	0253
---	------

- (Format/Naming)

- MACINTOSH ROMAN

Font family name	GGTAmos2
Font subfamily name	GGTAmos2
Unique font identifier	GGTAmos2
Version string	GGTAmos2v1.00
Full Font name	GGTAmos2
Postscript name	GGTAmos2

- MICROSOFT UNICODE

Font family name	GGTAmos2
Font subfamily name	GGTAmos2
Unique font identifier	GGTAmos2
Version string	GGTAmos2v1.00
Full Font name	GGTAmos2
Postscript name	GGTAmos2

- (Format/Settings/Header)

Units per em	1765	(was 2048)
Ascender	1500	(was 1825) (Lamed tip = 1475)
Descender	UNCHANGED	(was -443) (Qibbuš = -420)
Line Gap	UNCHANGED	(was 87)

- (Format/Settings/Windows)

Typo Ascender	UNCHANGED	(was 1420)
Typo Descender	UNCHANGED	(was -442)
Typo Line Gap	UNCHANGED	(was 307)
Win Ascent	1500	(was 1825)
Win Descent	UNCHANGED	(was 443)

Calculation of units per em for GGTAmos2

GGTAmos Ascender+Descender+Line Gap =	1825+443+87 =	2355
GGTAmos2 Ascender+Descender+Line Gap =	1500+443+87	2030
GGTAmos2 Units Per em=	(2030/2355)*2048	1765

Comparison with GGTAmos

GGTAmos 16 pt	GGTAmos2 14pt	GGTAmos2 16 pt
ב	ב	ב

The Other GGT Hebrew Fonts

The GGTHosea font is entirely compatible with GGTAmos, except for the dilatables (not implemented). So a text in GGTAmos can be switched to GGTHosea, and vice versa, by a font change only.

This is in contrast to the other fonts, which are *consonant* compatible, but where owing to the need to position diacritics according to the shape and width, are not *diacritic* compatible. Conversion of text can be done by a scripting program, and the text of the Hebrew Bible has been produced in each of them. The main purpose of allowing Masoretic signs with all fonts, whether or not the two are historically compatible, is to enable the learner to gain reading practice in each font while reading the Hebrew Bible, without loss of the vowels and other diacritics (unless desired).

In some of the tables that follow, we show the width of each consonant, and how it is to be treated, with the following legend

- wi wide
- na narrow
- ld lamed; because of its tip, it requires special treatment of a ḥolem
- qf qoph(-like); because of its foot, it requires a special subscript-Masoretic positioning.
- nf nun-final, special qameṣ
- kf kaph final, special qameṣ
- s šin/šin, special ḥolem

Where two properties are specified, the first takes precedence if applicable.

Example:

ז	ק	ו	ס	ך	ת	ש	ר	ק	ש	פ	ט	ס	נ	מ	ל	כ	י	ט	ח	ז	ו	ו	ה	ד	ג	ב	א
750	950	625	1000	1000	950	950	825	1000	750	925	1000	1000	625	1000	675	825	625	1050	1000	625	625	625	950	750	725	925	1000
na	wi	nfna	wi	kfwi	wi	s-wi	na	qfwi	na	wi	wi	wi	na	wi	ldna	na	na	wi	wi	na	wna	wna	wi	na	na	wi	wi

Waw may be consonantal or vocalic. The consonantal-waw dageš is supported in GGTAmos, GGTAmos2, GGTHosea, GGTHosea2, GGTRashi, GGTIvrit (not GGTDStIa, GGTSiloam, GGTSamaritan)

GGTHosea Summary (1)

This font is an example of how the printed square letters can be acceptably handwritten.

This font is entirely compatible with GGTAmos, except for the dilatables (not implemented). So a text in GGTAmos can be switched to GGTHosea, and vice versa, by a font change only.

GGTHosea Summary (2)

Consonants. Insert **dageš** and **rafe** to the **right** of the consonant.

ץ	ך	ן	ם	ך	ת	ש	ר	ק	צ	פ	ע	ס	נ	מ	ל	כ	י	ט	ח	ז	ו	ו	ו	ה	ד	ג	ב	א
C	P	N	M	K	t	#	r	q	c	p	(s	n	m	l	k	y	+	x	z	w	w	h	d	g	b)	

ץ	ך	ן	ם	ך	ת	ש	ר	ק	צ	פ	ע	ס	נ	מ	ל	כ	י	ט	ח	ז	ו	ו	ו	ה	ד	ג	ב	א
^	3	^	@	@	Z	3	@	%	4	Z	5	@	@	Z	%	%	5	@	@	%	[3	@	%	@	%	^	

Śin dots/holes, numerals and rafe.

װ	װ	אױ	לױ	װ	װ	װ	װ	אױ	בױ	ױ	ױ
Gn	0254#	)\$	`OI	`Oo#	o#\$	#\$	o#	}	{	ow	Gw

Vowels

- Insert vowel to the **right** of consonant, except o and O, which are to the **left**.
- **lamed** and **śin** have a special "o" only. Note that אױ, אױ etc. can also be produced.

	se wa	U	O	I	E	A
wide	װ, װ	װ, װ, װ	װ, װ, װ, װ	װ, װ, װ	װ, װ, װ, װ, װ	װ, װ, װ, װ, װ
	; ;	u u |u	/ f f o 0251 0251	i i |i	v e e ' '	j a a f f
	װ, װ	װ, װ, װ	װ, װ, װ, װ	װ, װ, װ	װ, װ, װ, װ, װ	װ, װ, װ, װ, װ
	0 T	U Q Q	2 B F o 0246 0252	i L \L	V S e D ' "	J R a B f
nar-row	װ, װ	װ, װ, װ	װ, װ, װ, װ	װ, װ, װ	װ, װ, װ, װ, װ	װ, װ, װ, װ, װ
	0 T	U Q |Q	2 B F o 0246 0252	I L |L	V S E D H	J R A B F
	װ, װ	װ, װ	װ, װ	װ, װ	װ, װ	װ, װ
	@; 7	6	0164 1 o 0245	i	0165 0170 0174	0166 0167 @= 1
װ				װ		װ
				װ		װ
				װ		װ
	0			Gw		

GGTDSIa Summary (1)

Font characters changed with respect to GGTAmos

- New consonants
- Extra "]", and reassignment of "[" for dageš qoph and gimel.
 - A separate consonantal-waw dageš is not supported
- "=" (final kaph qameš) shifted left
- Dageš positioning: Z and % are lower by 50 pts.

Font usage change

- **Gimel** is wide
- **Kaph, Lamed** are narrow
- **Qoph** is narrow, and not regarded as special, so **Qoph** cantillation is left of its foot
- Many dageš-per-consonant changes

GGTRashi Summary (1)

Font characters changed with respect to GGTAmos

- New consonants
- Dageš repositioning of "5" (for yod)

Font usage change

- Various width changes, no longer just 625 and 1000 points. Wide is ≥ 925 .
- Many dageš-per-consonant changes

GGTRashi Summary (2)

Consonants. Insert **dageš** and **rafe** to the **right** of the consonant.

ץ	ק	ן	ם	ך	ת	ש	ר	ק	ץ	פ	ט	ס	נ	מ	ל	כ	י	ט	ח	ז	ו	ו	ו	ה	ד	ג	ב	א
C	P	N	M	K	t	#	r	q	c	p	(	s	n	m	l	k	y	+	x	z	w	w	w	h	d	g	b)
ץ	ק	ן	ם	ך	ת	ש	ר	ק	ץ	פ	ט	ס	נ	מ	ל	כ	י	ט	ח	ז	ו	ו	ו	ה	ד	ג	ב	א
4	Z	^	Z	@	Z	@	%	%	%	Z	3	@	@	Z	@	@	5	@	@	%	[	@	@	%	Z	4	%	
750	950	625	1000	1000	950	950	825	1000	750	925	1000	1000	625	1000	675	825	625	1050	1000	625	625	625	950	750	725	925	1000	
na	wi	nfna	wi	kfw	wi	s-wi	na	qfw	na	wi	wi	wi	na	wi	ldna	na	na	wi	wi	na	wna	wna	wi	na	na	wi	wi	

Šin dots/ħolem, numerals and rafe, low stress mark.

ן	ץ	א	ב	ג	ד	ה	ו	ז	ח	ט	י	כ	ל
Gn	0254#)\$	`O|	`Oo#	o#&	#&	o#	}	{	ow	Gw	0253n	

Vowels

- Insert vowel to the **right** of consonant, except o and O, which are to the **left**.
- **lamed** and **šin** have a special "o" only. Note that אב, אב etc. can also be produced.

	se wa	U	O	I	E	A
wide	א א	ב ב ב	ג ג ג ג	ד ד ד ד	ה ה ה ה ה	ו ו ו ו ו
	; ;	u u |u	/ f f o	i i |i	v e e ' '	j a a f f
			0251 0251			
ק	ק ק	ק ק ק	ק ק ק ק	ק ק ק	ק ק ק ק ק	ק ק ק ק ק
	0 T	U Q Q	2 B F o	i L \L	V S e D ' '	J R a B f
			0246 0252			
nar-row	א א	ב ב ב	ג ג ג ג	ד ד ד ד	ה ה ה ה ה	ו ו ו ו ו
	0 T	U Q |Q	2 B F o	I L |L	V S E D H	J R A B F
			0246 0252			
ך	ך	ך	ך	ך	ך	ך
	@; 7	6	0164 1 0245 o	i	0165 0170 0174	0166 0167 @= 1
ו	ו	ו	ו	ו	ו	ו
	0		Gw `O			W

GGTivrit Summary (1)

Font characters changed with respect to GGTAmos

- New consonants
- New dagesh positioning, including consonantal waw ("[").
- The symbol "=" is now a version of holem for yod and waw (was qames in kaph final)

Font usage changes

- New wide and narrow
- Many dagesh-per-consonant changes
- **Final kaph** is like qoph
- **Lamed** is no longer special w.r.t. holem
- **Waw** and **yod** can take G as holem.

GGTivrit Summary (2)

Consonants. Insert **dageš** and **rafe** to the **right** of the consonant.

Ⓚ	Ⓛ	/	Ⓟ	Ⓠ	Ⓡ	Ⓢ	Ⓣ	Ⓤ	Ⓥ	Ⓦ	Ⓧ	Ⓨ	Ⓩ	Ⓩ	'	Ⓜ	Ⓨ	/	/	Ⓢ	Ⓣ	Ⓤ	Ⓥ				
C	P	N	M	K	t	#	r	q	c	p	(	s	n	m	l	k	y	+	x	z	w	w	h	d	g	b)
Ⓚ	Ⓛ	/	Ⓟ	Ⓠ	Ⓡ	Ⓢ	Ⓣ	Ⓤ	Ⓥ	Ⓦ	Ⓧ	Ⓨ	Ⓩ	Ⓩ	'	Ⓜ	Ⓨ	/	/	Ⓢ	Ⓣ	Ⓤ	Ⓥ				
4	4	@	@	@	@	4	%	%	%	3	4	@	@	^	4	%	5	%	@	4	[	%	@	5	4	%	4
1000	825	775	1075	1125	1250	825	1100	1075	1125	875	825	1050	825	1075	825	1050	625	1175	1000	1050	625	625	1075	1000	1000	1125	1300
wi	na	na	wi	qfwi	wi	na	wi	qfwi	wi	na	na	wi	na	wi	na	wi	na	wi	wi	wi	na	na	wi	wi	wi	wi	wi

Šin dots/ħolem, numerals and rafe, low stress mark.

Ⓢ	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇	Ⓢ̇
Gn	0254#	)\$	ol	`Oo#	o#	#	\$	o#	}	{	ow	Gw	0253n														

Vowels

- Insert vowel to the **right** of consonant, except o and O, which are to the **left**.
- Only **šin** (not lamed here) has a special "o" only. Note that *Ⓢ̇Ⓢ̇*, *Ⓢ̇Ⓢ̇* etc. can also be produced.

	se wa	U	O	I	E	A
wide	Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇ Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇ Ⓢ̇ Ⓢ̇
	; ;	u u |u	/ f f o	i i |i	v e e ' '	j a a f f
			0251 0251			
	Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇ Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇ Ⓢ̇ Ⓢ̇
	0 T	U Q Q	2 B F o	i L |L	V S e D ' '	J R a B f
			0246 0252			
nar-row	Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇ Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇ Ⓢ̇ Ⓢ̇
	0 T	U Q |Q	2 B F o	I L |L	V S E D H	J R A B F
			0246 0252			
	Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇ Ⓢ̇ Ⓢ̇	Ⓢ̇ Ⓢ̇ Ⓢ̇ Ⓢ̇ Ⓢ̇
	0 T	U Q Q	2 B F o	i L |L	V S e D ' '	J R a B f
			0246 0252			
/ / Ⓢ̇	Ⓢ̇		Ⓢ̇ Ⓢ̇ Ⓢ̇	Ⓢ̇		
	0		=w Gw ow ol			/ W

GGTSiloam Summary (1)

Font characters changed with respect to GGTAmos



- New consonants
- New dageš positioning.
- New dageš character assignments
 - A separate consonantal-waw dageš is not supported

Font usage changes

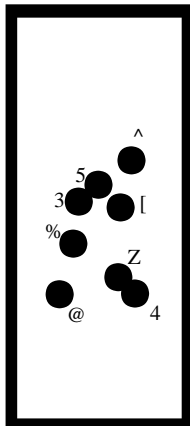
- New wide and narrow properties
 - Many dageš-per-consonant changes
- **Qoph** is treated purely as narrow קֿ
- **Kaph, Mem, Nun, Pe** steal space-left and take qoph-like positioning קֿ, מֿ, נֿ, פֿ.
- **Lamed** is not special with respect to ḥolem, but steals space-right; it does not clash: לֿ
- **Kaph-final** is treated as qoph. This releases the kaph-final vowels of GGTAmos: 1, 6, 7, "="
- "[" is used as an extra dageš

Superscript Masoretic symbols

- Superscript diacritics clash with tall consonants and vocalic waw-ḥolem, but we do not attempt to solve this, as the Hebrew Bible will not normally be rendered in this font in extenso.

- 'atnaḥ: 
- šalšelet: 

Dageš positions in character 0132



GGTSiloam Summary (2)

Consonants. Insert **dageš** and **rafe** to the **right** of the consonant. Width ≥ 925 can be wide.

𐤀	𐤁	𐤂	𐤃	𐤄	𐤅	𐤆	𐤇	𐤈	𐤉	𐤊	𐤋	𐤌	𐤍	𐤎	𐤏	𐤐	𐤑	𐤒	𐤓	𐤔	𐤕	𐤖	𐤗	𐤘	𐤙	𐤚	𐤛	𐤜	𐤝	𐤞	𐤟	𐤠	𐤡	𐤢	𐤣	𐤤	𐤥					
C	P	N	M	K	t	#	r	q	c	p	(s	n	m	l	k	y	+	x	z	w	h	d	g	b)																
					𐤅	𐤆	𐤇	𐤈	𐤉	𐤊	𐤋	𐤌	𐤍	𐤎	𐤏	𐤐	𐤑	𐤒	𐤓	𐤔	𐤕	𐤖	𐤗	𐤘	𐤙	𐤚	𐤛	𐤜	𐤝	𐤞	𐤟	𐤠	𐤡	𐤢	𐤣	𐤤	𐤥	𐤦				
					3	^	Z	[%	%	[@	%	%	[%	[5	4	Z	Z	4	[[Z	%																
					675	1125	750	1125	1500	1025	790	950	1125	900	1000	950	1075	1000	1000	1225	800	1000	975	700	925	925																
					na	siwi	na	na!	wi	qfwi	na	wi	qfwi	qfwi	wi	qfwi	wi	wi	wi	wi	na	wi	wi	na	wi	wi																

Šin dots/holem, numerals and rafe.

𐤛	𐤜	𐤝	𐤞	𐤟	𐤠	𐤡	𐤢	𐤣	𐤤	𐤥	𐤦	𐤧	𐤨	𐤩
Gn	0254#	)\$	`OI	`Oo#	o#\$	#\$	o#	}	{	ow	Gw			

Vowels

- No special O's needed

	sewa	U	O	I	E	A
wide	𐤅 𐤆	𐤇 𐤈 𐤉	𐤊 𐤋 𐤌	𐤍 𐤎 𐤏	𐤐 𐤑 𐤒 𐤓 𐤔	𐤕 𐤖 𐤗 𐤘 𐤙
	; ;	u u |u	/ f f o 0251 0251	i i |i	v e e ' '	j a a f f
𐤛	𐤛 𐤜	𐤝 𐤞 𐤟	𐤠 𐤡 𐤢 𐤣	𐤤 𐤥 𐤦	𐤧 𐤨 𐤩 𐤪 𐤫	𐤬 𐤭 𐤮 𐤯 𐤰
	0 T	U Q Q	2 B F o 0246 0252	i L |L	V S e D ' '	J R a B f
narrow	𐤛 𐤜	𐤝 𐤞 𐤟	𐤠 𐤡 𐤢 𐤣	𐤤 𐤥 𐤦	𐤧 𐤨 𐤩 𐤪 𐤫	𐤬 𐤭 𐤮 𐤯 𐤰
	0 T	U Q |Q	2 B F o 0246 0252	I L |L	V S E D H	J R A B F
𐤛	𐤛 𐤜	𐤝 𐤞 𐤟	𐤠 𐤡 𐤢 𐤣	𐤤 𐤥 𐤦	𐤧 𐤨 𐤩 𐤪 𐤫	𐤬 𐤭 𐤮 𐤯 𐤰
	0 T	U Q Q	2 B F o 0246 0252	i L |L	V S e D ' '	J R a B f
𐤛𐤜	𐤛		𐤛 𐤜 𐤝			𐤛
	0		ow Gw o			W

Siloam Inscription in GGTSiloam font

אֲנִי אֶשְׁכַּח אֶת־מַעַן אֲנִי אֶשְׁכַּח אֶת־מַעַן
אֲנִי אֶשְׁכַּח אֶת־מַעַן אֲנִי אֶשְׁכַּח אֶת־מַעַן
אֲנִי אֶשְׁכַּח אֶת־מַעַן אֲנִי אֶשְׁכַּח אֶת־מַעַן
אֲנִי אֶשְׁכַּח אֶת־מַעַן אֲנִי אֶשְׁכַּח אֶת־מַעַן
אֲנִי אֶשְׁכַּח אֶת־מַעַן אֲנִי אֶשְׁכַּח אֶת־מַעַן
אֲנִי אֶשְׁכַּח אֶת־מַעַן אֲנִי אֶשְׁכַּח אֶת־מַעַן
אֲנִי אֶשְׁכַּח אֶת־מַעַן אֲנִי אֶשְׁכַּח אֶת־מַעַן
אֲנִי אֶשְׁכַּח אֶת־מַעַן אֲנִי אֶשְׁכַּח אֶת־מַעַן

הנקבה וזה היה דבר הנקבה בעוד
הגרזן אש אל רעו ובעוד שלש אמת להנ. קל אש ק
רא אל רעו כי הית זדה בצר מימןובים ה
נקבה הכו החצבם אש לקרת רעו גרזן על גרזן וילכו
המים מן המוצא אל הברכה במאתים ואלף אמה ומא
ת אמה היה גבה הצר על ראש החצב

GGTSamaritan Summary (1)

Font characters changed with respect to GGTAmos

- New consonants
- New dageš positioning
- New dageš character assignments
 - A separate consonantal-waw dageš is not supported

Font usage changes

- New wide and narrow properties
 - Many dageš-per-consonant changes
- ***Lamed*** treated as ordinary wide character. "O" still needed for śin+ḥolem.
- ***Qoph*** treated as ordinary wide character. Releases: "\", 9, 8 0230,0234,0241,0242,0243,0244,0247
- ***Kaph-final*** treated as ordinary wide character. Releases characters 1,6,7,"="
- 1, 6, 7, 8, 9, "=", "\", "[", "]" used for dagešes; 0230 etc available.

Appendix - GGTAmos character map. Grey shading denotes a supplied character.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1a		!	"	ש	ש	ג	&	ב	ע	א	*	ט	,	-	.	ב	
key	sp	!	"	#	\$	%	&	'	()	*	+	,	-	.	/	
Hex	\$20	\$21	\$22	\$23	\$24	\$25	\$26	\$27	\$28	\$29	\$2A	\$2B	\$2C	\$2D	\$2E	\$2F	
Alt/	0032	0033	0034	0035	0036	0037	0038	0039	0040	0041	0042	0043	0044	0045	0046	0047	
1b	קָ	ךְ	גְ	ש	צ	"	ךְ	ךְ	קְ	קְ	:	בְ	<	ךְ	>	?	
key	sqz	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
Hex	\$30	\$31	\$32	\$33	\$34	\$35	\$36	\$37	\$38	\$39	\$3A	\$3B	\$3C	\$3D	\$3E	\$3F	
Alt/	0048	0049	0050	0051	0052	0053	0054	0055	0056	0057	0058	0059	0060	0061	0062	0063	
2a	ב	ג	קָ	ץ	קָ	גְ	גְ	ו	גְ	גְ	גְ	ךְ	קָ	ם	ן	ל	
key	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
Hex	\$40	\$41	\$42	\$43	\$44	\$45	\$46	\$47	\$48	\$49	\$4A	\$4B	\$4C	\$4D	\$4E	\$4F	
Alt/	0064	0065	0066	0067	0068	0069	0070	0071	0072	0073	0074	0075	0076	0077	0078	0079	
2b	ךְ	קָ	קָ	קָ	גְ	גְ	גְ	ו	בג	בג	ב	ו	ק	5D	א	-	
key	P	sqz	sqz	sqz	T	U	V	W	X	Y	Z	[\]	^	_	
Hex	\$50	\$51	\$52	\$53	\$54	\$55	\$56	\$57	\$58	\$59	\$5A	\$5B	\$5C	\$5D	\$5E	\$5F	
Alt/	0080	0081	0082	0083	0084	0085	0086	0087	0088	0089	0090	0091	0092	0093	0094	0095	
3a	נ	ב	ב	צ	ד	בְ	בְ	ג	ה	בְ	בְ	כ	ל	מ	נ	ב	
key	1/8nbr	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	
Hex	\$60	\$61	\$62	\$63	\$64	\$65	\$66	\$67	\$68	\$69	\$6A	\$6B	\$6C	\$6D	\$6E	\$6F	
Alt/	0096	0097	0098	0099	0100	0101	0102	0103	0104	0105	0106	0107	0108	0109	0110	0111	
3b	פ	ק	ר	ס	ת	בְ	בְ	ו	ח	י	ז	בְ	בג	ג	~	גְ	
key	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	c/I	
Hex	\$70	\$71	\$72	\$73	\$74	\$75	\$76	\$77	\$78	\$79	\$7A	\$7B	\$7C	\$7D	\$7E	\$7F	
Alt/	0112	0113	0114	0115	0116	0117	0118	0119	0120	0121	0122	0123	0124	0125	0126	0127	
4a		גְ	«	»	□	*	*	*	א	%	Š	<	Œ	גְ	Ž	גְ	
key	€	•	,	f	„	...	†	‡	^	%	š	<	œ	•	ž	•	
latin1	20AC	undef	201A	0192	201E	2026	2020	2021	20C6	2030	0160	2039	0152	undef	017D	undef	
Hex	\$80	\$81	\$82	\$83	\$84	\$85	\$86	\$87	\$88	\$89	\$8A	\$8B	\$8C	\$8D	\$8E	\$8F	
Alt/	0128	0129	0130	0131	0132	0133	0134	0135	0136	0137	0138	0139	0140	0141	0142	0143	

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
4b	⌘	⌘	⌘	“	”	•	—	—	~	™	š	›	œ	⌘	ž	ÿ
key	•	•	•	“	”	•	—	—	~	™	š	›	œ	•	ž	ÿ
latin1	undef	2018	2019	201C	201D	2022	2013	2014	02DC	2122	0161	203A	0153	undef	017E	0178
Hex	\$90	\$91	\$92	\$93	\$94	\$95	\$96	\$97	\$98	\$99	\$9A	\$9B	\$9C	\$9D	\$9E	\$9F
Alt/	0144	0145	0146	0147	0148	0149	0150	0151	0152	0153	0154	0155	0156	0157	0158	0159
5a		*	←	→	⌘	⌘	⌘	⌘	()	⌘	□	•	-	⌘	/
key	nbrk	i	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	-	®	-
latin1	00A0	00A1	00A2	00A3	00A4	00A5	00A6	00A7	00A8	00A9	00AA	00AB	00AC	00AD	00AE	00AF
Hex	\$A0	\$A1	\$A2	\$A3	\$A4	\$A5	\$A6	\$A7	\$A8	\$A9	\$AA	\$AB	\$AC	\$AD	\$AE	\$AF
Alt/	0160	0161	0162	0163	0164	0165	0166	0167	0168	0169	0170	0171	0172	0173	0174	0175
5b	0	1	2	3	4	5	6	7	8	9	:	[\]	{	}
key	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
latin1	00B0	00B1	00B2	00B3	00B4	00B5	00B6	00B7	00B8	00B9	00BA	00BB	00BC	00BD	00BE	00BF
Hex	\$B0	\$B1	\$B2	\$B3	\$B4	\$B5	\$B6	\$B7	\$B8	\$B9	\$BA	\$BB	\$BC	\$BD	\$BE	\$BF
Alt/	0176	0177	0178	0179	0180	0181	0182	0183	0184	0185	0186	0187	0188	0189	0190	0191
6a	א	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב
key	paseq	sglt	šiš	zq-q	zq-g	revia	tifha	zarqa	pšt	É	tevir	grš	gršm	pazer	qr-pr	tel-g
latin1	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
Hex	\$C0	\$C1	\$C2	\$C3	\$C4	\$C5	\$C6	\$C7	\$C8	\$C9	\$CA	\$CB	\$CC	\$CD	\$CE	\$CF
Alt/	0192	0193	0194	0195	0196	0197	0198	0199	0200	0201	0202	0203	0204	0205	0206	0207
6b	'	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב
key	Ð	mhp	mrk	m-kf	darg	azl	tel-q2	glgl	tel-q1	sole	mugr	tel-gl	illuy	šinn	circ	mtg-r
latin1	00D0	00D1	00D2	00D3	00D4	00D5	00D6	00D7	00D8	00D9	00DA	00DB	00DC	00DD	00DE	00DF
Hex	\$D0	\$D1	\$D2	\$D3	\$D4	\$D5	\$D6	\$D7	\$D8	\$D9	\$DA	\$DB	\$DC	\$DD	\$DE	\$DF
Alt/	0208	0209	0210	0211	0212	0213	0214	0215	0216	0217	0218	0219	0220	0221	0222	0223
7a	ז	ז	ז	ז	ז	ז	ז	ז	ז	ז	ז	ז	ז	ז	ז	ז
key	l-half	mid	mid	mtgm	l-half	r-half		l-half	r-half							
latin1	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
Hex	\$E0	\$E1	\$E2	\$E3	\$E4	\$E5	\$E6	\$E7	\$E8	\$E9	\$EA	\$EB	\$EC	\$ED	\$EE	\$EF
Alt/	0224	0225	0226	0227	0228	0229	0230	0231	0232	0233	0234	0235	0236	0237	0238	0239
7b	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב	ב
key	ð	ñ	ò	ó	ô	q-htf	q-htf	÷	l-half	mid	r-half	q-htf	q-htf	LoStr	HbNr	qf-mr
latin1	00F0	00F1	00F2	00F3	00F4	00F5	00F6	00F7	00F8	00F9	00FA	00FB	00FC	00FD	00FE	00FF
Hex	\$F0	\$F1	\$F2	\$F3	\$F4	\$F5	\$F6	\$F7	\$F8	\$F9	\$FA	\$FB	\$FC	\$FD	\$FE	\$FF
Alt/	0240	0241	0242	0243	0244	0245	0246	0247	0248	0249	0250	0251	0252	0253	0254	0255

References and Glossary

- BHS Biblia Hebraica Stuttgartensia
Deutsche Bibelgesellschaft , P.O.Box 810340, 7000 Stuttgart 80, Germany
- CCAT Center for Computer Analysis of Texts
University of Pennsylvania, <http://ccat.sas.upenn.edu/>
- eBHS The *Electronic Biblia Hebraica Stuttgartensia*,
Available from the Oxford Text Archive (see OTA below).
- MC-coding Michigan-Claremont coding. An encoding scheme for Hebrew and Greek texts. It
is used by the eBHS.
- OTA The Oxford Text Archive
<http://ota.ahds.ac.uk/>
- TBS The Trinitarian Bible Society
Tyndale House, Dorset Rd, London SW19 3NN, Tel 0181-543-7857