

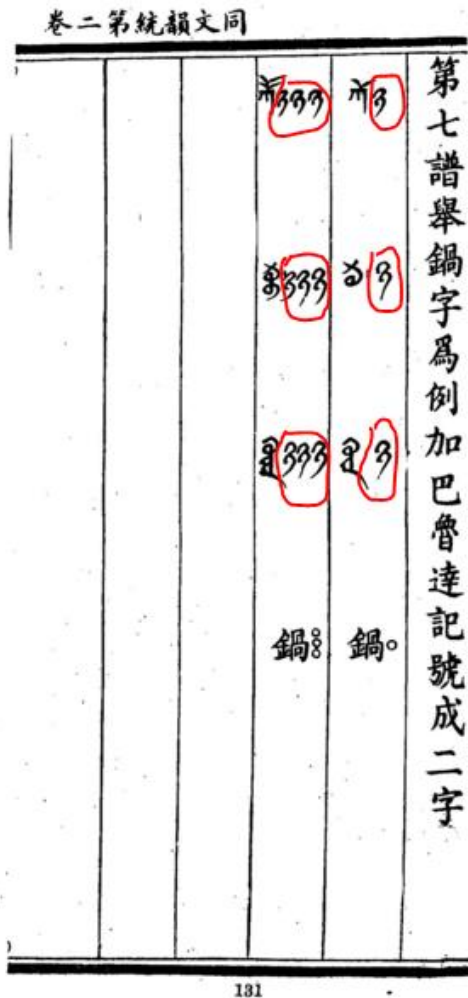
TO: Unicode Technical Committee  
FROM: Greg Eck (with input from members of the W3C Mongolian discussion list)  
DATE: 26 January 2016  
SUBJECT: Mongolian discussion documents

This document includes the following:

1. “Baluda Refinements”  
Request to change General Category for Mongolian MONGOLIAN LETTER ALI GALI BALUDA U+1885 and MONGOLIAN LETTER ALI GALI THREE BALUDA U+1886  
(page 1)
2. “FVS Mis-match” (pp. 2-5)
3. Contents page (page 6)
  - a. Exhaustive Analysis of Original Standardized Variants Listing (pp. 7-9 )  
Mongolian Velar Family of Glyphs (pp. 9-13)  
Proposal for Unification of Mongolian Velar Block (pp. 13-14)  
Action items for Unification of the Mongolian Velar Block (page 14)  
Unicode Isolate Glyphs without FVS Assignment (pp. 14-15)
  - b. Additional New FVS Assignments (pp. 15-17)
  - c. Additional New FVS Control Character (page 17)
4. Standardized Variants Table (pp. 18-30)  
This table has two views:
  - (a) The first view is sorted on the CodePoint sequence.
  - (b) The second view is sorted on the particular grouping under review (eg. first is the Velar Glyph Family, second is the Unicode Isolates, third are the new proposals for assignment, etc.)

## Baluda Refinements

The Baluda pair (U+1885 / U+1886) has never been implemented correctly. This was brought to light in 2012 in meetings with Professor Quejingzhabu when he informed us that the baluda actually is written to the right of the top-most letter of a given word. Since that time, others have confirmed the same thought. Andrew West has put forth the following interesting finding<sup>1</sup>:



Current font shaping is like this .....  
Where the baluda is shaped in-line with the text instead of to the right side of the text.

Proposal: Change the general category from Lo (Letter, Other) to Mn (non-spacing mark) so that the character can be processed as a diacritical mark rather than a letter drawn on the stem. The Dagalga (U+18A8) is currently being processed as a mark successfully.

<sup>1</sup> [http://www.babelstone.co.uk/Mongolian/TWYT\\_130.jpg](http://www.babelstone.co.uk/Mongolian/TWYT_130.jpg)

**FVS MIS-MATCH**  
(see DS00\_FVSMisMatch.pdf)

There are two opinions on how to determine the position of a glyph before/after the NNBSM/MVS. The first method as written up in the earliest documentation (MGWBM/TR170) seems to hold the idea that anything between the first letter and the last letter of a Mongolian word is in the medial position. If there is a NNBSM or a MVS control character in the middle of the word, the letters adjacent to the NNBSM/MVS are still considered to be in the medial position. The second method as implemented by font developers (at least those in our forum) is to consider the letters pre/post NNBSM/MVS as final/initial. In other words, the letter before an NNBSM/MVS (assuming that the string of letters preceding the NNBSM/MVS has more than one letter) is considered to be in the final position. A letter following an NNBSM/MVS is considered to be in the initial position (assuming that the string of letters following the NNBSM/MVS has more than one letter). The Microsoft Universal Shaping Engine (aka Uniscribe) and the Google Harfbuzz rendering engine both follow the second method. This has created a “disconnect” between those holding to the first method and those holding to the second method. There are several cases where we can see that a font has placed the FVS assignment in two locations, thus following both methods rather than holding to one opinion.

Proposal: Leave the fonts as they are (in running text implementation). Glyph shaping in running text displays fine. It is the FVS specification where we find variation and duplication. Change the FVS specification to match the actual positions as determined by the font rendering engines. Given such a specification, the individual font developers will know how to change their FVS implementations in their individual fonts.

form	Q	USVL	NP	MB	FZ	NSM	MWc	BS	MS
isolate									
is+fvs1									
initial									
in+fvs1			n/s						
medial									
m+fvs1									
m+fvs2									
final									
f+fvs1									

- U+1820-A (post-NNBSM) by the MGWBM, TR170, and current Chinese Standard: **Medial**  
ZWJ+1820+FVS2+ZWJ      *Third Medial Form*
- U+1820-A (post-NNBSM) by the Universal Shaping Engine (Uniscribe) / Harfbuzz: **Initial**
- Proposed

1820+FVS1+ZWJ

↖ (x\_) *Second Initial Form*

form	Q	USVL	NP	MB	FZ	NSM	MWc	BS	MS
isolate	↖		↖	↖	↖	↖	↖	↖	↖
initial	↖		↖	↖	↖	↖	↖	↖	↖
i+fvs1	↗	↗	↗	↗	↗	↗	↗	↗	↗
medial	↖		↖	↖	↖	↖	↖	↖	↖
m+fvs1	↖	↖	↖	↖	↖	↖	↖	↖	↖
m+fvs2	↘	↘	↘	↘	↘	↘	↘	↘	↘
m+fvs3	↖	↖	↖	↖	↖	↖	↖	↖	↖
final	↘		↘	↘	↘	↘	↘	↘	↘
f+fvs1			n/s	↘	↘	↘	↘	↘	↘

- U+1828-N (pre-MVS) by the MGWBM, TR170, and current Chinese Standard: **Medial**  
 ZWJ+1828+FVS2+ZWJ ↙ (x\_) *Third Medial Form*
- U+1828-N (pre-MVS) by the Universal Shaping Engine (Uniscribe) / Harfbuzz: **Final**
- Proposed  
 ZWJ+1828+FVS1 ↙ (x\_) *Second Final Form*

m+fvs2	↘	↘	↘	↘ » ↘	↘	↘	↘	↘	↘
m+fvs3	↘	↘	↘	↘ » ↘	↘	↘	↘	↘	↘
final			n/s	↘	↘	↘	↘	↘	↘
f+fvs1			n/s	↘	↘	↘	↘	↘	↘

- U+182C-Q (pre-MVS) #1 by the MGWBM, TR170, and current Chinese Standard: **Medial**  
 ZWJ+182C+FVS2+ZWJ ↙ (x\_) *Third Medial Form*
- U+182C-Q (pre-MVS) #1 by the Universal Shaping Engine (Uniscribe) / Harfbuzz: **Final**
- Proposed  
 ZWJ+182C+FVS1 ↙ (x\_) *Second Final Form*

- U+182C-Q (pre-MVS) #2 by the MGWBM, TR170, and current Chinese Standard: **Medial**  
ZWJ+182C+FVS3+ZWJ      ㄩ (x\_) *Fourth Medial Form*

- U+182C-Q (pre-MVS) #2 by the Universal Shaping Engine (Uniscribe) / Harfbuzz: **Final**

- Proposed  
ZWJ+182C      ㄩ (x\_) *First Final Form*

m+fvs2	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ
m+fvs3	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ
final	ㄩ		ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ
f+fvs1		ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ
f+fvs2	ㄩ		ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ
f+fvs3			n/s	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ

- U+182D-G (pre-MVS) by the MGWBM, TR170, and current Chinese Standard: **Medial**  
ZWJ+182D+FVS2+ZWJ      ㄩ (x\_) *Third Medial Form*

- U+182D-G (pre-MVS) by the Universal Shaping Engine (Uniscribe) / Harfbuzz: **Final**

- Proposed  
ZWJ+182D+FVS3      ㄩ (x\_) *Fourth Final Form*

form	Q	USVL	NP	MB	FZ	NSM	MWc	BS	MS
isolate	ㄩ		ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ
initial	ㄩ		ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ
medial	ㄩ		ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ
m+fvs1	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ
final	ㄩ		ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ
f+fvs1			n/s	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ	ㄩ

- U+1835-J (pre-MVS) by the MGWBM, TR170, and current Chinese Standard: **Medial**

ZWJ+1835+FVS1+ZWJ      (x\_)      *Second Medial Form*

- U+1835-J (pre-MVS) by the Universal Shaping Engine (Uniscribe) / Harfbuzz: **Final**

- Proposed  
 ZWJ+1835+FVS1      (x\_)      *Second Final Form*

form	Q	USVL	NP	MB	FZ	NSM	MWc	BS	MS
isolate	ㄣ		ㄣ	ㄣ	ㄣ	ㄣ	ㄣ	ㄣ	ㄣ
initial	ㄣ		ㄣ	ㄣ	ㄣ	ㄣ	ㄣ	ㄣ	ㄣ
i+fvs1	ㄠ	ㄠ	ㄠ	ㄠ	ㄠ	ㄠ	ㄠ	ㄠ	ㄠ
medial	ㄣ		ㄣ	ㄠ >> ㄣ	ㄣ	ㄣ	ㄣ	ㄣ	ㄠ
m+fvs1	ㄠ	ㄣ	ㄠ	ㄠ	ㄠ	ㄠ	ㄠ	ㄠ	ㄣ
m+fvs2	ㄣ	ㄣ	ㄣ	ㄣ	ㄣ	ㄣ	ㄣ	ㄣ	ㄣ
final			n/s	ㄣ	ㄣ	ㄣ	ㄣ	ㄣ	ㄣ

- U+1836-Y (pre-MVS) by the MGWBM, TR170, and current Chinese Standard: **Medial**

ZWJ+1836+FVS2+ZWJ      (x\_)      *Third Medial Form*

- U+1836-Y (pre-MVS) by the Universal Shaping Engine (Uniscribe) / Harfbuzz: **Final**



- Proposed  
 ZWJ+1836      (x\_)      *Final Form*

This paper has three sections:

- I. Exhaustive Analysis of Original Standardized Variants Listing
  - A. Column 1 – Graphic image of the Unicode code-point in question
  - B. Column 2 – Unicode sequence assigned to a given positional variant (eg. 1820 180B, 1825 180C, 182D 180D, etc.)
  - C. Column 3 – Variant position (ie. Isolate, initial, medial or final)
  - D. Column 4 – Positional variant glyph image/text
  - E. Column 5 – Unicode formal name of the code-point followed by phrase describing the particular variant
  - F. Superfluous assignments / Troublesome assignments
    1. Mongolian Velar Family of Glyphs
    2. Unicode Isolate Glyphs without FVS Assignment
- II. Additional New FVS Assignments
- III. Additional New FVS Control Character

## Exhaustive Analysis of Original Standardized Variants Listing <sup>1</sup>


Column 1 – No issues

Column 2 – One issue (182D-GA) Masculine final form -  ; Feminine final form - .













- There is confusion at the feminine final 182D-GA. This is easily the most complex variant in the Mongolian script context-wise and possibly specification-wise as well. The MGWBM places the variant at 182D+180C. The TR170 specification places the variant at the 182D+180B. The reason that the MGWBM skips one FVS slot (FVS1) and places the feminine form at 182D+180C is that the specification has taken into account the need for the default context to be over-ridden in special cases. There are several cases where the default context determining the final feminine form is present, but the correct form is the masculine. This case would be handled by the 182D+FVS1-Final over-ride. The MGWBM notation uses the parenthesis, as below, to say that the masculine is both the final default as well as the FVS1 assigned glyph. This form of notation is confusing in its terse-ness, however concise in its descriptive power. This is what I teach my students:

ZWJ+182D                      ᠺ (x\_) *First Final Form*  
 ZWJ+182D+FVS1              ᠻ (x\_) *Second Final Form*  
 ZWJ+182D+FVS2              ᠼ (x\_) *Third Final Form*

The font implementations under inspection are all in complete agreement as shown at the Ishida Font Comparator site<sup>2</sup>

final									
f+fvs1									
f+fvs2									
f+fvs3			n/s						

MGWBM follows ...

		ml. ga final form	ga						
		ml. ga feminine isolate form	ga						
3		ml. ga feminine medial form	ga						030
4		ml. ga feminine final form	ga						031

TR170 follows ...

<sup>1</sup> <http://www.unicode.org/Public/UNIDATA/StandardizedVariants.html> as of January 20, 2016.

<sup>2</sup> <http://r12a.github.io/scripts/mongolian/variants.html>



45		MONGOLIAN LETTER GA	-		FIRST INITIAL FORM			GA
			44		SECOND INITIAL FORM			GA
			6		FIRST MEDIAL FORM			GA
			26		SECOND MEDIAL FORM			GA
			27		THIRD MEDIAL FORM			GA
			28		FINAL FORM			GA
			137		FEMININE ISOATE FORM			GA
			30		FEMININE MEDIAL FORM			GA
			31		FEMININE FINAL FORM			GA

PROPOSAL: Change the FVS assignment for the feminine final GA from 182D+FVS1 to 182D+FVS2.

**Column 3** – One issue of incorrect positional assignment, as follows ...

- The 1887 isolate is actually a final. This was brought to light in discussions with Professor Quejingzhabu late last year (2015). The question now, is how to assign it as a final since all of the FVS slots are taken up. Suggested solution is the specification of a new FVS4.

**Column 4** – Five issues where the glyph is either incorrect or needing refinement, as follows ...

- Initial 185F+FVS1: Current is ; Desired is
- Medial 1873+FVS3: Current is ; Desired is
- 1881+FVS1: Current is ; Desired is
- Final 1887+FVS1: Current is ; Desired is
- Final 1887+FVS3: Current is ; Desired is

**Column 5** – Eleven issues where the description could be sharpened, as follows ...

- Medial 1828+FVS4 – the term “separate” is used only once in the entire block; it is felt that in keeping to similar descriptions such as “first”, “second”, “third”, “fourth”, there is greater clarity. Proposed description is “fourth medial form” rather than “separate form”.
- Final 182A+FVS1 – the term “alternate” again is used only in this one occasion; for the same reason as above the proposed description is “second final form” rather than “alternate form”.
- Isolate 182C+FVS1 – the main feature used in the description is easily seen to be position (first, second, third, fourth, fifth); the additional feature of gender if used in the description should not be as prominent as the main feature of position; if used, it should be used consistently throughout the specification – a study should be done to determine whether this is indeed the case. Proposal is to leave the description as tight as possible and use only position and leave out gender – in this case “second isolate form”.
- Final 182D+FVS2 – for the same reason as above the proposal is to leave the term “feminine” out and use the description “third final form” instead of “feminine form”. There

will be cases where this “feminine” form is used in words that are actually masculine also, so again the addition of gender directly in the description is a bit cumbersome.

- Medial 182D+FVS3 – for the same reason above, the proposal is to use the description of “fourth medial form” rather than “feminine form”.
- Initial 184D+FVS1 – for the same reason above, the proposal is to use the description of “second initial form” rather than “feminine form”.
- Medial 184D+FVS1 – for the same reason above, the proposal is to use the description of “second medial form” rather than “feminine form”.
- Final 1874+FVS1 – for the same reason above, the proposal is to use the description of “second final form” rather than “feminine first final form”.
- Medial 1874+FVS2 – for the same reason above, the proposal is to use the description of “third medial form” rather than “feminine first medial form”.
- Final 1874+FVS2 – for the same reason above, the proposal is to use the description of “third final form” rather than “feminine second final form”.
- Medial 1874+FVS3 – for the same reason above, the proposal is to use the description of “fourth final form” rather than “feminine second final form”.

### **Mongolian Velar Family of Glyphs**

The Mongolian Script standards (MGWBM<sup>3</sup> and the TR170<sup>4</sup>) have gone through a lot of change from definition to the stage of actual implementations. You can see the initial design thoughts in the early standards. You can trace the history of what worked and what did not work. One thing that seems to have not worked was the use of the feminine isolates as an initial default. At least in the Chinese Standard, you can see the move away from this idea to the more workable masculine as the display default. I have never had a full round of discussion about this process, but it seems that this is what happened. Given this premise then, it is reasonable that we see gaps and inconsistencies around the area of the feminine isolates for the Mongolian QA/GA, Todo QA/GA, Sibe KA/GA/HA, and the Manchu KA.

This is a very special class of variants. There is no question that they all need assignment for purposes of teaching heuristic, for dictionary headings, and such. There is also the possibility of over-specification however as currently seen in the Todo pair. I think it is wise to look at these all together and determine an appropriately economic as well as effectual assignment. Given the need to display these forms in dictionaries, we have a clear justification for the stand-alone isolate. There is another area that covers probably more scope however. That is the area of ligaturing. The feminine forms of these glyphs all ligature readily. And we might say more precisely, they only ligature except when used in an isolate setting. This means that they never appear in initial or medial positions except in ligatured context. And of course, they would never appear in a final context. So, we might consider these feminine glyphs to have virtual forms in the initial and medial contexts. As we have already agreed that the isolate form is justified, we might consider, for purposes of economics, not assigning FVS initial/medial sequences (which should be almost identical), but allowing the isolate form to represent the virtual forms at the initial / medial contexts. A precedent for this approach is found currently in the Mongolian 182C/182D pair where there is no initial/medial FVS assignment found for these feminine glyphs. This representation could be annotated allowing for the overall reduction of at least two FVS assignments per letter.

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<sup>3</sup> <http://www.babelstone.co.uk/Mongolian/MGWBM.html>

<sup>4</sup> <ftp://ftp.iist.unu.edu/pub/techreports/report170a.tgz>

There is another case where this method has not been followed resulting in inconsistent specification. This is the Todo pair at U+184D/U+184E. According to the MGWBM/TR170/USVL we find one initial specification and one medial specification at U+184D. However at U+184E, the sister letter, we find no initial/medial feminine form assignment. Instead we find one isolate feminine FVS assignment. This method of assignment is exactly the opposite of the sister letter, 184D.

Looking at the attached chart, we can start with the Mongolian pair QA/GA to set the nomenclature paradigm. Though current documentation is shy about specifying an isolate for a consonant, all font designers know that each position must have a display form. Therefore, specify the QA initial default (which is also the Unicode presentation glyph) as the masculine isolate glyph. This is followed by the feminine isolate closest to the default – the undotted form taking the first FVS1 slot. The remaining dotted feminine isolate takes the FVS2 slot. Following the same pattern for the Mongolian 182D-GA, we take the initial default which is masculine as the default isolate. The feminine glyph closest in feature to the default isolate is the dotted isolate – so this glyph takes the FVS1 slot. The remaining isolate, the undotted feminine form takes the FVS2 slot. This pattern, which almost matches the earliest documentation then gives us a template to follow in the FVS assignments of the Todo pair, the Sibe three and the Manchu single.

- MONGOLIAN 182C-QA/182D-GA (TR170)

44	↪	MONGOLIAN LETTER QA	-	↪	FIRST INITIAL FORM	↪	ZW Join	QA		
			45	↪	SECOND INITIAL FORM	↪	ZW Join	FV1 S1	QA	
			6	↪	FIRST MEDIAL FORM	ZW Join	↪	ZW Join	QA	
			26	↪	SECOND MEDIAL FORM	ZW Join	↪	ZW Join	FV1 S1	QA
			27	↪	THIRD MEDIAL FORM	ZW Join	↪	ZW Join	FV1 S2	QA
			28	↪	FOURTH MEDIAL FORM	ZW Join	↪	ZW Join	FV1 S3	QA
			137	↪	FEMININE FIRST ISOLATE FORM	↪			QA	
			29	↪	FEMININE SECOND ISOLATE FORM	↪		FV1 S1	QA	
45	↪	MONGOLIAN LETTER GA	-	↪	FIRST INITIAL FORM	↪	ZW Join	GA		
			44	↪	SECOND INITIAL FORM	↪	ZW Join	FV1 S1	GA	
			6	↪	FIRST MEDIAL FORM	ZW Join	↪	ZW Join	GA	
			26	↪	SECOND MEDIAL FORM	ZW Join	↪	ZW Join	FV1 S1	GA
			27	↪	THIRD MEDIAL FORM	ZW Join	↪	ZW Join	FV1 S2	GA
			28	↪	FINAL FORM	ZW Join	↪		GA	
			137	↪	FEMININE ISOATE FORM	↪			GA	
			30	↪	FEMININE MEDIAL FORM	ZW Join	↪	ZW Join	FV1 S3	GA
		31	↪	FEMININE FINAL FORM	ZW Join	↪	FV1 S1	GA		

- MONGOLIAN 182C-QA/182D-GA (MGWBM)

			1	ᠠ
			137	ᠠ
			2	ᠠ
045	ᠠ	ML. GA		ᠠ
			044	ᠠ
			032 - 3	ᠠ
			1	ᠠ
			2	ᠠ
			044 - 1	ᠠ
			137	ᠠ

ml. qa fourth medial form	qa			ᠠ	026
ml. qa feminine isolate form	qa			ᠠ	
ml. qa feminine isolate form with dots	qa			ᠠ	027
ml. ga initial form with dots	ga			ᠠ	
ml. ga initial form	ga			ᠠ	
ml. ga first medial form	ga			ᠠ	
ml. ga second medial form	ga			ᠠ	028
ml. ga third medial form	ga			ᠠ	029
ml. ga final form	ga			ᠠ	(EVL)
ml. ga feminine isolate form	ga			ᠠ	

- Todo 184D-QA / 184E-GA (TR170)

BASIC CHARACTERS			VARIANT FORMS				
No	CHARACTER	NAME	No	GLYPH	NAME	RULE	
77	ᠠ	MONGOLIAN LETTER TODO QA	-	ᠠ	INITIAL FORM	ᠠ	
				26	ᠠ	MEDIAL FORM	ᠠ
				59	ᠠ	FEMININE INITIAL FORM	ᠠ
				59	ᠠ	FEMININE MEDIAL FORM	ᠠ
				54	ᠠ	FEMININE FINAL FORM	ᠠ
78	ᠡ	MONGOLIAN LETTER TODO GA	-	ᠡ	INITIAL FORM	ᠡ	
				83	ᠡ	FIRST MEDIAL FORM	ᠡ
				84	ᠡ	SECOND MEDIAL FORM	ᠡ
				85	ᠡ	FINAL FORM	ᠡ
				137	ᠡ	FEMININE ISOLATE FORM	ᠡ

- TODO 184D-QA / 184E-GA (MGWBM)

077	ᠠ	MLT. QA		ᠠ
			045 - 1	ᠠ
			059	ᠠ
			059	ᠠ
			059 - 1	ᠠ
078	ᠡ	MLT. GA		ᠡ
			1	ᠡ
			2	ᠡ

mlt. qa initial form	qa			ᠠ
mlt. qa medial form with dots	qa			ᠠ
mlt. qa feminine initial form	qa			ᠠ
mlt. qa feminine medial form	qa			ᠠ
mlt. qa final form	qa			ᠠ
mlt. ga initial form	ga			ᠡ
mlt. ga first medial form	ga			ᠡ
mlt. ga second medial form	ga			ᠡ

			3	ᠠ
			137	ᠠ

mlt. ga final form	ga			ᠡ	085
mlt. ga feminine isolate form	ga			ᠡ	

- SIBE 1863-QA / 1864-GA / 1865-HA (TR170)

99			44	ᠠ	INITIAL FORM	ᠠ	ᠠ			KA
			6	ᠠ	FIRST MEDIAL FORM	ᠠ	ᠠ			KA
			104	ᠠ	SECOND MEDIAL FORM	ᠠ	ᠠ	[FV] [S1]		KA
	ᠠ	MONGOLIAN LETTER SIBE KA		ᠠ	FINAL FORM	ᠠ	ᠠ			KA
			137	ᠠ	FEMININE ISOLATE FORM	ᠠ	ᠠ			KA
100	ᠠ	MONGOLIAN LETTER SIBE GA	-	ᠠ	INITIAL FORM	ᠠ	ᠠ			GA GA
			105	ᠠ	MEDIAL FORM	ᠠ	ᠠ			GA GA
			106	ᠠ	FEMININE ISOLATE FORM	ᠠ	ᠠ			GA GA
101	ᠠ	MONGOLIAN LETTER SIBE HA	-	ᠠ	INITIAL FORM	ᠠ	ᠠ			HA HA
			107	ᠠ	MEDIAL FORM	ᠠ	ᠠ			HA HA
			108	ᠠ	FEMININE ISOLATE FORM	ᠠ	ᠠ			HA HA

- MONGOLIAN 1863-QA / 1864-GA / 1865-HA (MGWBM)

099			044	ᠠ						
			032 - 3	ᠠ						
			1	ᠠ						
	ᠠ	MLS. KA		ᠠ						
			137	ᠠ						
100	ᠠ	MLS. GA		ᠠ						
			1	ᠠ						
			2	ᠠ						
101	ᠠ	MLS. QA		ᠠ						
			1	ᠠ						
			2	ᠠ						

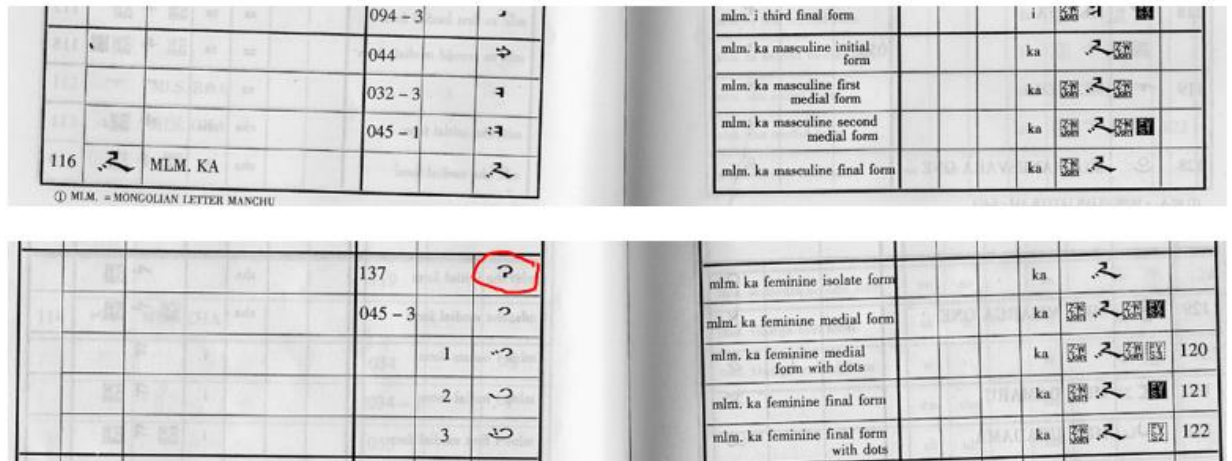
  

m.s. ka masculine initial form		ka	ᠠ						
m.s. ka first medial form		ka	ᠠ	ᠠ					101
m.s. ka second medial form		ka	ᠠ	ᠠ	ᠠ				104
m.s. ka final form		ka	ᠠ	ᠠ					
m.s. ka feminine isolate form		ka	ᠠ	ᠠ					
m.s. ga initial form		ga	ga	ᠠ	ᠠ				
m.s. ga medial form		ga	ga	ᠠ	ᠠ	ᠠ			105
m.s. ga feminine isolate form		ga	ga	ᠠ	ᠠ				106
m.s. qa initial form		qa	qa	ᠠ	ᠠ				
m.s. qa medial form		qa	qa	ᠠ	ᠠ	ᠠ			107
m.s. qa feminine isolate form		qa	qa	ᠠ	ᠠ				108

- MANCHU 1874-KA (TR170)
























116			44	ᠠ	INITIAL FORM	ᠠ	ᠠ			KA
			6	ᠠ	FIRST MEDIAL FORM	ᠠ	ᠠ			KA
			26	ᠠ	SECOND MEDIAL FORM	ᠠ	ᠠ	[FV] [S1]		KA
	ᠠ	MONGOLIAN LETTER MANCHU KA		ᠠ	FINAL FORM	ᠠ	ᠠ			KA
			137	ᠠ	FEMININE ISOLATE FORM	ᠠ	ᠠ			KA
			30	ᠠ	FEMININE FIRST MEDIAL FORM	ᠠ	ᠠ	[FV] [S2]		KA
			120	ᠠ	FEMININE SECOND MEDIAL FORM	ᠠ	ᠠ	[FV] [S3]		KA
			121	ᠠ	FEMININE FIRST FINAL FORM	ᠠ	ᠠ	[FV] [S1]		KA
			122	ᠠ	FEMININE SECOND FINAL FORM	ᠠ	ᠠ	[FV] [S2]		KA

- MANCHU 1874-KA (MGWBM)



- AliGali 1889-KA (added for sake of completion although there is nothing needed here in the FVS area)

### Proposal for Unification of the Mongolian Velar Block

- 182C (x\_)  MONGOLIAN LETTER QA  
 182C+FVS1  (x\_) *Second Isolate Form*  
 182C+FVS2  (x\_) *Third Isolate Form*  
 182C+ZWJ  (x\_) *First Initial Form*
- 182D (x\_)  MONGOLIAN LETTER GA  
 182D+FVS1  (x\_) *Second Isolate Form*  
 182D+FVS2  (x\_) *Third Isolate Form*  
 182D+ZWJ  (x\_) *First Initial Form*
- 184D (x\_)  MONGOLIAN LETTER TODO QA  
 184D+FVS1  (x\_) *Second Isolate Form*  
 184D+ZWJ  (x\_) *Initial Form*
- 184E (x\_)  MONGOLIAN LETTER TODO GA  
 184E+FVS1  (x\_) *Second Isolate Form*  
 184E+ZWJ  (x\_) *Initial Form*
- 1863 (x\_)  MONGOLIAN LETTER SIBE KA  
 1863  (x\_) *First Isolate Form*  
 1863+FVS1  (x\_) *Second Isolate Form*  
 1863+ZWJ  (x\_) *Initial Form*
- 1864 (xx)  MONGOLIAN LETTER SIBE GA  
 1864+FVS1  (xx) *Second Isolate Form*  
 1864+ZWJ  (xx) *Initial Form*
- 1865 (xx)  MONGOLIAN LETTER SIBE HA  
 1865+FVS1  (xx) *Second Isolate Form*

- 1865+ZWJ ↕<sub>(xx)</sub> *Initial Form*
- 1874 (x) ↕ MONGOLIAN LETTER MANCHU KA
    - 1874 ↕<sub>(x)</sub> *First Isolate Form*
    - 1874+FVS1 ↕<sub>(x)</sub> *Second Isolate Form*
    - 1874+ZWJ ↕<sub>(x)</sub> *Initial Form*
  - 1889 (xx) ↕ MONGOLIAN LETTER ALI GALI KA
    - 1889+ZWJ ↕<sub>(xx)</sub> *Initial Form*

### Action Items for Unification of the Mongolian Velar Block

- U+182C-Mongolian QA
  - Change 182C+FVS1 from the dotted feminine isolate to the undotted isolate as the second isolate form
  - Add 182C+FVS2 dotted feminine isolate as the third isolate form
- U+182D-Mongolian GA
  - Add 182D+FVS1 dotted feminine isolate as the second isolate form
  - Add 182D+FVS2 undotted feminine isolate as the third isolate form
- U+184D-Todo QA
  - Delete 184D+FVS1 feminine initial
  - Delete 184D+FVS1 feminine medial
  - Add 184D+FVS1 feminine isolate as the second isolate form
- U+184E-Todo GA
  - Add 184E+FVS1 feminine isolate as the second isolate form
- U+1863-Sibe KA
  - Add 1863+FVS1 first feminine isolate as the first isolate form
  - Add 1863+FVS2 second feminine isolate as the second isolate form
- U+1864-Sibe GA
  - Add 1864+FVS1 second feminine isolate as the second isolate form
- U+1865-Sibe HA
  - Add 1864+FVS1 second feminine isolate as the second isolate form
- U+1874-Manchu KA
  - Add 1874+FVS1 first feminine isolate as the first isolate form
  - Add 1874+FVS2 second feminine isolate as the second isolate form
- U+1889-AliGali KA
  - No action necessary

NOTE: You may be asking why there is a difference of treatment at 1863 and 1874? Why is there a first isolate in these two cases and not in the others? These are two special cases where the Unicode ascribed code-point glyph is not the initial but instead another positional variant – in this case the final variant. Whereas in other cases the first isolate is also the initial/Unicode glyph and there is no need to state that it is the first isolate – in this case the first isolate must be explicitly assigned or there will be no way to display the glyph except through simulation with the ZWJ. This begs the question, then, as to whether we should also assign FVS positions to the 15 code-points whose Unicode glyphs are also un-displayable except by simulating the position with ZWJ. This is the area as discussed below.

### Unicode Isolate Forms without FVS assignments

This is an FYI at present. The issue is that there is no easy way for the user to type these code-point's Unicode form without having intrinsic understanding of the block. The user will have to use a ZWJ combination. The user will have to know the position of the particular code-point that is the Unicode form. It is felt that this should be a simple task to write any given Unicode form whereas in reality it is not.

- 1824 (Initial) – already included as a proposed new variant

- 1826 (Initial) – already included as a proposed new variant
- 184A (Final)
- 184B (Final)
- 184F (Final)
- 1859 (Final)
- 185D (Final)
- 185E (Second Medial)
- 1861 (Medial)
- 1862 (Final)
- 1863 (Final)
- 1873 (Final)
- 1874 (Medial)
- 1875 (Final)
- 1876 (Medial)

### Additional New FVS Assignments

- New FVS2 assignment at <U+1822-Medial><U+180C> Three out of six font developers implement this double-tooth U+1822 form.

ZWJ+1822+FVS2+ZWJ      𑌛 (x\_)      *Third Medial Form*

- New FVS3 assignment at <U+1822-Medial><U+180D> This variant is needed to over-ride default context of the medial I in words such as NAIMA “eight”.

ZWJ+1822+FVS3+ZWJ      𑌜 (x\_)      *Fourth Medial Form*

- New FVS1 assignment at <U+1822-Final><U+180B> This 1822 final variant has been attested by various independent sources.

ZWJ+1822+FVS1      𑌝 (x\_)      *Second Final Form*

- New FVS1 assignment at <U+1824-Isolate><U+180B> This variant is needed to display the Unicode isolate form of U+1824. This is also an important glyph for dictionary headings.

1824+FVS1      𑌞 (x\_)      *Second Isolate Form*

- New FVS1 assignment at <U+1824-Final><U+180B> This variant is needed for foreign spellings such as “Nassau”.

ZWJ+1824+FVS1      𑌟 (x\_)      *Second Final Form*

- New FVS2 assignment at <U+1824-Final><U+180C> This variant has been attested by several independent sources as a variant of the dotted genitive case U/UE after the sequence <U+1828-N><NNBSP>.

ZWJ+1824+FVS2      𑌠 (x\_)      *Third Final Form*

- New FVS2 assignment at <U+1826-Isolate><U+180C> This variant is needed to display the Unicode isolate form of U+1826. This is also an important glyph for dictionary headings.

1826+FVS2      𑌡 (x\_)      *Third Isolate Form*



- New FVS3 assignment at <U+1826-Medial><U+180D> This variant is needed to over-ride the context so that we can use the DUEGER with or without the NNBSF.

ZWJ+1826+FVS3+ZWJ      𐎢 (x\_)      *Fourth Medial Form*

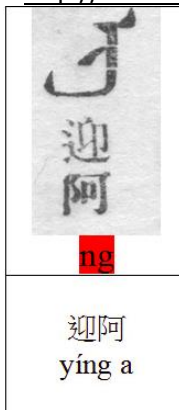
- New FVS2 assignment at <U+1826-Final><U+180C> This variant has been attested by several independent sources as a variant of the dotted genitive case U/UE after the sequence <U+1828-N><NNBSF>.

ZWJ+1826+FVS2      𐎣 (x\_)      *Third Final Form*

- New FVS4 assignment at <U+1828-Medial><U+180F> This default form is needed with FVS assignment to over-ride native context for such rare cases as ANAR.

ZWJ+1828+FVS4+ZWJ      𐎤 (x\_)      *Fifth Medial Form*

- New FVS1 assignment at <U+1829-Isolate><U+180B> This isolate is evidenced in the dictionary "mongyol nanggiyad üsüg-ün toli bičig" (蒙漢字典) published in 1928. This is shown in context at <http://www.cneas.tohoku.ac.jp/staff/hkuri/articles/a62houkoku14.pdf>



- New FVS2 assignment at <U+182C-Initial><U+180C> This variant is needed for the special case of QQIR.

182C+FVS2+ZWJ      𐎥 (x\_)      *Third Initial Form*

- New FVS3 assignment at <U+182D><U+180C> This variant is needed for foreign loan words such as GRAM.

182D+FVS2+ZWJ      𐎦 (x\_)      *Third Initial Form*

- New FVS4 assignment at <U+182D><U+180F> This default form is needed with FVS assignment to over-ride native context for such rare cases as COGAGULA.

ZWJ+182D+FVS4+ZWJ      𐎧 (x\_)      *Fifth Medial Form*

- New FVS1 assignment at <U+1843><U+180B> This variant has been attested to.

ZWJ+1843+FVS1      𐎨 (x\_)      *Second Final Form*

- New FVS3 assignment at <U+1887><U+180F> This is currently listed as an isolate in the Chinese Standard. Professor Quejingzhabu says that this is a mistake and is actually a final.

**New FVS Control Character**

- There are three instances now where the FVS4 may be needed, one of which is definitely confirmed. The current <U+1887-Isolate><FVS1> is actually a final as confirmed by Professor Quejingzhabu. There is discussion ongoing now as to whether this control character should actually be something of a “Default Variant Selector” as there are at least four cases where this feature could be helpful. One of our forum members would argue that there are 40+ cases where such a feature could be helpful. The problem is that we will still be needing a more generic new control character to handle instances like the U+1887. Additional information forthcoming regarding the New 2016 Chinese Standard will be helpful in directing this proposal also.

180F

(xxxx)



MONGOLIAN FREE VARIATION SELECTOR FOUR

**Further Research Necessary**

- 180A-Finals
- 1860-ThirdFinalForm
- 1868/1869-Medials – is the order correct?
- 1873-FourthFinalForm
- 1888-SecondMedialForm
- 18A0-SecondInitialForm
- 18A0-SecondMedialForm
- 18A1-SecondInitialForm
- 18A1-SecondMedialForm

Code-Point Sequence	Glyph	Code	Unicode Name/ Variant Name	Code Legend
180F	FVS4	II	Mongolian Free Variation Selector Four	<b>F1 – Velar Family</b>
1820+FVS1	ᠮ	X	Second Isolate Form	<b>F2 – Unicode Isolates</b>
1820+FVS1	ᠮ	X	Second Medial Form	<b>I – Proposed New Variants</b>
1820+FVS2	ᠮ	MM	Third Medial Form	<b>II – Proposed New FVS</b>
1820+FVS1	ᠮ	X	Second Final Form	<b>MM – FVS MisMatch</b>
1821+FVS1	ᠮ	X	Second Initial Form	<b>X – Previous Assignment</b>
1821+FVS1	ᠮ	X	Second Final Form	
1822+FVS1	ᠮ	X	Second Medial Form	
1822+FVS2	ᠮ	I	Third Medial Form	
1822+FVS3	ᠮ	I	Fourth Medial Form	
1822+FVS1	ᠮ	I	Second Final Form	
1823+FVS1	ᠮ	X	Second Medial Form	
1823+FVS1	ᠮ	X	Second Final Form	
1824+FVS1	ᠮ	F2	Second Isolate Form	
1824+FVS1	ᠮ	x	Second Medial Form	
1824+FVS1	ᠮ	I	Second Final Form	
1824+FVS2	ᠮ	I	Third Final Form	
1825+FVS1	ᠮ	x	Second Medial Form	
1825+FVS2	ᠮ	x	Third Medial Form	
1825+FVS1	ᠮ	x	Second Final Form	
1826+FVS1	ᠮ	x	Second Isolate Form	
1826+FVS2	ᠮ	F2	Third Isolate Form	
1826+FVS1	ᠮ	x	Second Medial Form	

1826+FVS2	୧	x	Third Medial Form	
1826+FVS3	୨	I	Fourth Medial Form	
1826+FVS1	୩	x	Second Final Form	
1826+FVS2	୪	I	Third Final Form	
1828+FVS1	୫	x	Second Initial Form	
1828+FVS1	୬	x	Second Medial Form	
1828+FVS2	୭	MM	Third Medial Form	
1828+FVS3	୮	x	Fourth Medial Form	
1828+FVS4	୯	I	Fifth Medial Form	
1829+FVS1	TBD	I	Second Isolate Form	
182A+FVS1	୧୦	x	Second Final Form	
182C+FVS1	୧୧	F1	Second Isolate Form	
182C+FVS2	୧୨	F1	Third Isolate Form	
182C+FVS1	୧୩	x	Second Initial Form	
182C+FVS2	୧୪	I	Third Initial Form	
182C+FVS1	୧୫	x	Second Medial Form	
182C+FVS2	୧୬	MM	Third Medial Form	
182C+FVS3	୧୭	MM	Fourth Medial Form	
182D+FVS1	୧୮	F1	Second Isolate Form	
182D+FVS2	୧୯	F1	Third Isolate Form	
182D+FVS1	୨୦	x	Second Initial Form	
182D+FVS2	୨୧	I	Third Initial Form	
182D+FVS1	୨୨	x	Second Medial Form	
182D+FVS2	୨୩	MM	Third Medial Form	
182D+FVS3	୨୪	x	Fourth Medial Form	
182D+FVS4	୨୫	x	Fifth Medial Form	

182D+FVS1	୯	x	Second Final Form	
182D+FVS2	୧୦	x	Third Final Form	
1830+FVS1	୧୧	x	Second Final Form	
1830+FVS2	୧୨	x	Third Final Form	
1832+FVS1	୧୩	x	Second Medial Form	
1833+FVS1	୧୪	x	Second Initial Form	
1833+FVS1	୧୫	x	Second Medial Form	
1833+FVS1	୧୬	x	Second Final Form	
1835+FVS1	୧୭	MM	Second Medial Form	
1836+FVS1	୧୮	x	Second Initial Form	
1836+FVS1	୧୯	x	Second Medial Form	
1836+FVS2	୨୦	MM	Third Medial Form	
1838+FVS1	୨୧	x	Second Medial Form	
1838+FVS1	୨୨	x	Second Final Form	
1843+FVS1	୨୩	I	Second Final Form	
1844+FVS1	୨୪	x	Second Medial Form	
1845+FVS1	୨୫	x	Second Medial Form	
1846+FVS1	୨୬	x	Second Medial Form	
1847+FVS1	୨୭	x	Second Isolate Form	
1847+FVS1	୨୮	x	Second Medial Form	
1847+FVS2	୨୯	x	Third Medial Form	
1847+FVS1	୩୦	x	Second Final Form	
1848+FVS1	୩୧	x	Second Medial Form	
1849+FVS1	୩୨	x	Second Isolate Form	
1849+FVS1	୩୩	x	Second Medial Form	

184A	ᄃ	F2	Final Form	
184B	ᄃ	F2	Final Form	
184D+FVS1	ᄄ	F1	Second Isolate Form	
184E+FVS1	ᄅ	F1	Second Isolate Form	
184E+FVS1	ᄆ	x	Second Medial Form	
184F	ᄇ	F2	Final Form	
1859	ᄈ	F2	Final Form	
185D+FVS1	ᄉ	x	Second Medial Form	
185D	ᄊ	F2	First Final Form	
185D+FVS1	ᄋ	x	Second Final Form	
185E+FVS1	ᄌ	F2	Second Medial Form	
185E+FVS2	ᄍ	x	Third Medial Form	
185E+FVS1	ᄎ	x	Second Final Form	
185E+FVS2	ᄏ	x	Third Final Form	
1860+FVS1	ᄐ	x	Second Medial Form	
1860+FVS1	ᄑ	x	Second Final Form	
1860+FVS2	ᄒ	x	Third Final Form	
1861	ᄓ	F2	Medial Form	
1862	ᄔ	F2	Final Form	
1863+FVS1	ᄕ	F1	Second Isolate Form	
1863+FVS1	ᄖ	x	Second Medial Form	
1863	ᄗ	F2	Final Form	
1864+FVS1	ᄘ	F1	Second Isolate Form	
1865+FVS1	ᄙ	F1	Second Isolate Form	
1868+FVS1	ᄚ	x	Second Initial Form	

1868+FVS1	ᄁ	x	Second Medial Form	
1868+FVS2	ᄂ	x	Third Medial Form	
1869+FVS1	ᄃ	x	Second Initial Form	
1869+FVS1	ᄄ	x	Second Medial Form	
186F+FVS1	ᄅ	x	Second Initial Form	
186F+FVS1	ᄆ	x	Second Medial Form	
1873+FVS1	ᄇ	x	Second Medial Form	
1873+FVS2	ᄈ	x	Third Medial Form	
1873+FVS3	ᄉ	x	Fourth Medial Form	
1873	ᄊ	F2	First Final Form	
1873+FVS1	ᄋ	x	Second Final Form	
1873+FVS2	ᄌ	x	Third Final Form	
1873+FVS3	ᄍ	x	Fourth Final Form	
1874+FVS1	ᄎ	F1	Second Isolate Form	
1874+FVS1	ᄏ	x	Second Medial Form	
1874+FVS2	ᄐ	x	Third Medial Form	
1874+FVS3	ᄑ	x	Fourth Medial Form	
1874	ᄒ	F2	First Final Form	
1874+FVS1	ᄓ	x	Second Final Form	
1874+FVS2	ᄔ	x	Third Final Form	
1875	ᄕ	F2	Final Form	
1876+FVS1	ᄖ	x	Second Initial Form	
1876	ᄗ	F2	First Medial Form	
1876+FVS1	ᄘ	x	Second Medial Form	
1880+FVS1	ᄙ	x	Second Form	

1881+FVS1	𐌲	x	Second Form	
1887+FVS1	ʹ	x	Second Final Form	
1887+FVS2	〕	x	Third Final Form	
1887+FVS3	↵	x	Fourth Final Form	
1887+FVS4	𐌲	l	Fifth Final Form	
1888+FVS1	ꝛ	x	Second Medial Form	
1888+FVS1	ꝛ	x	Second Final Form	
188A+FVS1	𐌲	x	Second Initial Form	
188A+FVS1	𐌲	x	Second Medial Form	
18A0+FVS1	𐌲	x	Second Initial Form	
18A0+FVS1	𐌲	x	Second Medial Form	
18A1+FVS1	𐌲	x	Second Initial Form	
18A1+FVS1	𐌲	x	Second Medial Form	





<b>Code-Point Sequence</b>	<b>Glyph</b>	<b>Code</b>	<b>Unicode Name/ Variant Name</b>	<b>Code Legend</b>
180F	FVS4	II	Mongolian FVS4	<b>F1 – Velar Family</b>
182C+FVS1	ᠨ	F1	Second Isolate Form	<b>F2 – Unicode Isolates</b>
182C+FVS2	ᠨ᠊	F1	Third Isolate Form	<b>I – Proposed New Variants</b>
182D+FVS1	ᠨ	F1	Second Isolate Form	<b>II – Proposed New FVS</b>
182D+FVS2	ᠨ᠊	F1	Third Isolate Form	<b>MM – FVS MisMatch</b>
184D+FVS1	ᠨ	F1	Second Isolate Form	
184E+FVS1	ᠨ	F1	Second Isolate Form	
1863+FVS1	ᠨ	F1	Second Isolate Form	
1864+FVS1	ᠨ᠊	F1	Second Isolate Form	
1865+FVS1	ᠨ᠊	F1	Second Isolate Form	
1874+FVS1	ᠨ	F1	Second Isolate Form	
1859	ᠨ	F2	Final Form	
1861	ᠨ	F2	Medial Form	
1862	ᠨ᠊	F2	Final Form	
1863	ᠨ᠊	F2	Final Form	
1873	ᠨ	F2	First Final Form	
1874	ᠨ᠊	F2	First Final Form	
1875	ᠨ	F2	Final Form	
1876	ᠨ	F2	First Medial Form	
1824+FVS1	ᠨ	F2	Second Isolate Form	
1826+FVS2	ᠨ᠊	F2	Third Isolate Form	
184A	ᠨ	F2	Final Form	
184B	ᠨ	F2	Final Form	

184F	ϕ	F2	Final Form	
185D	√	F2	First Final Form	
185E+FVS1	κ	F2	Second Medial Form	
1822+FVS1	η	I	Second Final Form	
1822+FVS2	κ	I	Third Medial Form	
1822+FVS3	ρ	I	Fourth Medial Form	
1824+FVS1	σ	I	Second Final Form	
1824+FVS2	θ	I	Third Final Form	
1826+FVS2	θ	I	Third Final Form	
1826+FVS3	σ	I	Fourth Medial Form	
1828+FVS1	TBD	I	Second Isolate Form	
1828+FVS4	ρ	I	Fifth Medial Form	
182C+FVS2	ϕ	I	Third Initial Form	
182D+FVS2	ϕ	I	Third Initial Form	
1843+FVS1	ι	I	Second Final Form	
1887+FVS4	ϛ	I	Fifth Final Form	
1820+FVS2	τ	MM	Third Medial Form	
1828+FVS2	√	MM	Third Medial Form	
182C+FVS2	ν	MM	Third Medial Form	
182C+FVS3	ν	MM	Fourth Medial Form	
182D+FVS2	ν	MM	Third Medial Form	
1835+FVS1	ϕ	MM	Second Medial Form	
1836+FVS2	ϕ	MM	Third Medial Form	
1820+FVS1	η	x	Second Isolate Form	
1820+FVS1	π	x	Second Medial Form	
1820+FVS1	ς	x	Second Final Form	

1821+FVS1	ॡ	x	Second Initial Form	
1821+FVS1	Ɔ	x	Second Final Form	
1822+FVS1	ॢ	x	Second Medial Form	
1823+FVS1	Ɔ	x	Second Medial Form	
1823+FVS1	Ɔ	x	Second Final Form	
1824+FVS1	Ɔ	x	Second Medial Form	
1825+FVS1	ॢ	x	Second Medial Form	
1825+FVS1	Ɔ	x	Second Final Form	
1825+FVS2	ॢ	x	Third Medial Form	
1826+FVS1	ॢ	x	Second Isolate Form	
1826+FVS1	ॢ	x	Second Medial Form	
1826+FVS1	Ɔ	x	Second Final Form	
1826+FVS2	ॢ	x	Third Medial Form	
1828+FVS1	†	x	Second Initial Form	
1828+FVS1	‡	x	Second Medial Form	
1828+FVS3	‡	x	Fourth Medial Form	
182A+FVS1	Ɔ	x	Second Final Form	
182C+FVS1	‡	x	Second Medial Form	
182C+FVS2	†	x	Third Initial Form	
182D+FVS1	†	x	Second Initial Form	
182D+FVS1	‡	x	Second Medial Form	
182D+FVS1	√	x	Second Final Form	
182D+FVS2	Ɔ	x	Third Final Form	
182D+FVS3	Ɔ	x	Fourth Medial Form	
182D+FVS4	‡	x	Fifth Medial Form	

1830+FVS1	√	x	Second Final Form	
1830+FVS2	h	x	Third Final Form	
1832+FVS1	q	x	Second Medial Form	
1833+FVS1	g	x	Second Initial Form	
1833+FVS1	g	x	Second Medial Form	
1833+FVS1	g	x	Second Final Form	
1836+FVS1	r	x	Second Initial Form	
1836+FVS1	r	x	Second Medial Form	
1838+FVS1	o	x	Second Medial Form	
1838+FVS1	o	x	Second Final Form	
1844+FVS1	l	x	Second Medial Form	
1845+FVS1	l	x	Second Medial Form	
1846+FVS1	o	x	Second Medial Form	
1847+FVS1	h	x	Second Isolate Form	
1847+FVS1	o	x	Second Medial Form	
1847+FVS1	o	x	Second Final Form	
1847+FVS2	o	x	Third Medial Form	
1848+FVS1	h	x	Second Medial Form	
1849+FVS1	h	x	Second Isolate Form	
1849+FVS1	o	x	Second Medial Form	
184E+FVS1	l	x	Second Medial Form	
185D+FVS1	r	x	Second Medial Form	
185D+FVS1	√	x	Second Final Form	
185E+FVS1	o	x	Second Final Form	
185E+FVS2	r	x	Third Medial Form	

185E+FVS2	ᳵ	x	Third Final Form	
1860+FVS1	ᳶ	x	Second Medial Form	
1860+FVS1	᳷	x	Second Final Form	
1860+FVS2	᳸	x	Third Final Form	
1863+FVS1	᳹	x	Second Medial Form	
1868+FVS1	ᳺ	x	Second Initial Form	
1868+FVS1	᳻	x	Second Medial Form	
1868+FVS2	᳼	x	Third Medial Form	
1869+FVS1	᳽	x	Second Initial Form	
1869+FVS1	᳾	x	Second Medial Form	
186F+FVS1	᳿	x	Second Initial Form	
186F+FVS1	᳾	x	Second Medial Form	
1873+FVS1	᳾	x	Second Medial Form	
1873+FVS1	᳿	x	Second Final Form	
1873+FVS2	᳾	x	Third Medial Form	
1873+FVS2	᳿	x	Third Final Form	
1873+FVS3	᳾	x	Fourth Medial Form	
1873+FVS3	᳾	x	Fourth Final Form	
1874+FVS1	᳾	x	Second Medial Form	
1874+FVS1	᳾	x	Second Final Form	
1874+FVS2	᳾	x	Third Medial Form	
1874+FVS2	᳾	x	Third Final Form	
1874+FVS3	᳾	x	Fourth Medial Form	
1876+FVS1	᳾	x	Second Initial Form	
1876+FVS1	᳾	x	Second Medial Form	

1880+FVS1	○	x	Second Form	
1881+FVS1	⊗	x	Second Form	
1887+FVS1	∕	x	Second Final Form	
1887+FVS2	)	x	Third Final Form	
1887+FVS3	↵	x	Fourth Final Form	
1888+FVS1	ṛ	x	Second Medial Form	
1888+FVS1	ṛ	x	Second Final Form	
188A+FVS1	ṛ	x	Second Initial Form	
188A+FVS1	ṛ	x	Second Medial Form	
18A0+FVS1	ṛ	x	Second Initial Form	
18A0+FVS1	ṛ	x	Second Medial Form	
18A1+FVS1	ṛ	x	Second Initial Form	
18A1+FVS1	ṛ	x	Second Medial Form	