

# Rotations of Egyptian Hieroglyphs to be Registered in Unicode\*

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Based on an evaluation of Manuel de Codage encodings from *Thesaurus Linguae Aegyptiae* database (BBAW Berlin, Daniel A. Werning), **Pyramid Text** encoding project (Frank Kammerzell, Daniel A. Werning), **Karnak Project** database (Sébastien Biston-Moulin), **Athribis project** encodings (Christian Leitz, Carolina Teotino), **Kom Ombo project** encodings (Françoise Labrique, Sven Eicke).

Frequency values are minimum frequencies and may combine cases of various similar angles.

*Caveat:* In the cases marked in pale yellow, the angle of the standard Unicode glyph deviates slightly from the standard angle in JSesh; the corresponding effect has been taken into account in course of the evaluation so that the suggested angles for the rotation still largely make sense.)

Unicode	JSesh	Rotated	Freq.	Listing
			9	13012 FE03; Egyptian Ad-Hoc Working Group; A015 Rotated 30
			1	13091 FE00; Egyptian Ad-Hoc Working Group; D027 Rotated 90
			10	13092 FE00; Egyptian Ad-Hoc Working Group; D027A Rotated 90
			105	13093 FE01; Egyptian Ad-Hoc Working Group; D028 Rotated 180
			2	130A9 FE01; Egyptian Ad-Hoc Working Group; D047 Rotated 180
			11	130B8 FE03; Egyptian Ad-Hoc Working Group; D052 Rotated 25
			44	1310F FE03; Egyptian Ad-Hoc Working Group; F016 Rotated 30
			6	1310F FE00; Egyptian Ad-Hoc Working Group; F016 Rotated 90
			3	13117 FE02; Egyptian Ad-Hoc Working Group; F023 Rotated 270
			2	1311C FE00; Egyptian Ad-Hoc Working Group; F028 Rotated 90
			3	13121 FE00; Egyptian Ad-Hoc Working Group; F032 Rotated 90
			327	13127 FE00; Egyptian Ad-Hoc Working Group; F037A Rotated 90
			52	1312F FE03; Egyptian Ad-Hoc Working Group; F044 Rotated 30
			55	1312F FE05; Egyptian Ad-Hoc Working Group; F044 Rotated 60
			22	13139 FE03; Egyptian Ad-Hoc Working Group; F051 Rotated 45
			35	13139 FE00; Egyptian Ad-Hoc Working Group; F051 Rotated 90
			1	13139 FE06; Egyptian Ad-Hoc Working Group; F051 Rotated 135
			151	13139 FE05; Egyptian Ad-Hoc Working Group; F051 Rotated 225

\*When citing this document, please use the following: Daniel A. Werning. Jan. 2022 (revised April 2022), Rotations of Egyptian Hieroglyphs to be Registered in Unicode, <https://osf.io/d2m9h/>

Unicode	JSesh	Rotated	Freq.	Listing
			10	13139 FE02; Egyptian Ad-Hoc Working Group; F051 Rotated 270
			4	13139 FE04; Egyptian Ad-Hoc Working Group; F051 Rotated 315
			3	1317F FE04; Egyptian Ad-Hoc Working Group; H001 Rotated 330
			1	13180 FE04; Egyptian Ad-Hoc Working Group; H002 Rotated 330
			13	13183 FE02; Egyptian Ad-Hoc Working Group; H005 Rotated 270
			10	13184 FE03; Egyptian Ad-Hoc Working Group; H006 Rotated 25
			17	13184 FE04; Egyptian Ad-Hoc Working Group; H006 Rotated 335
			2	13187 FE03; Egyptian Ad-Hoc Working Group; H008 Rotated 30
			2	13187 FE01; Egyptian Ad-Hoc Working Group; H008 Rotated 180
			6	1319C FE03; Egyptian Ad-Hoc Working Group; K002 Rotated 45
			1	1319D FE03; Egyptian Ad-Hoc Working Group; K003 Rotated 30
			7	1319F FE03; Egyptian Ad-Hoc Working Group; K005 Rotated 30
			2	131A0 FE00; Egyptian Ad-Hoc Working Group; K006 Rotated 90
			1	131A0 FE02; Egyptian Ad-Hoc Working Group; K006 Rotated 270
			30	131B0 FE04; Egyptian Ad-Hoc Working Group; M002 Rotated 345
			4	131B1 FE03; Egyptian Ad-Hoc Working Group; M003 Rotated 45
			39	131B1 FE00; Egyptian Ad-Hoc Working Group; M003 Rotated 90
			4	131B1 FE01; Egyptian Ad-Hoc Working Group; M003 Rotated 180
			2	131B8 FE00; Egyptian Ad-Hoc Working Group; M009 Rotated 90
			2	131B9 FE03; Egyptian Ad-Hoc Working Group; M010 Rotated 45
			7	131B9 FE00; Egyptian Ad-Hoc Working Group; M010 Rotated 90
			2	131B9 FE05; Egyptian Ad-Hoc Working Group; M010 Rotated 135
			1	131BA FE02; Egyptian Ad-Hoc Working Group; M010A Rotated 270
			1	131CB FE00; Egyptian Ad-Hoc Working Group; M017 Rotated 90
			8	131DB FE03; Egyptian Ad-Hoc Working Group; M029 Rotated 20
			17	131DB FE04; Egyptian Ad-Hoc Working Group; M029 Rotated 340
			6	131EE FE01; Egyptian Ad-Hoc Working Group; M044 Rotated 180

Unicode	JSesh	Rotated	Freq.	Listing
			5	131EE FE02; Egyptian Ad-Hoc Working Group; M044 Rotated 270
			8	131EE FE04; Egyptian Ad-Hoc Working Group; M044 Rotated 330
			14	131F8 FE01; Egyptian Ad-Hoc Working Group; N010 Rotated 180
			30	131F9 FE00; Egyptian Ad-Hoc Working Group; N011 Rotated 90
			21	131F9 FE01; Egyptian Ad-Hoc Working Group; N011 Rotated 180
			12	131FA FE00; Egyptian Ad-Hoc Working Group; N012 Rotated 90
			21	131FA FE01; Egyptian Ad-Hoc Working Group; N012 Rotated 180
			50	13205 FE03; Egyptian Ad-Hoc Working Group; N021 Rotated 30
			557	13205 FE04; Egyptian Ad-Hoc Working Group; N021 Rotated 330
			7	13216 FE02; Egyptian Ad-Hoc Working Group; N035 Rotated 270
			78	13257 FE01; Egyptian Ad-Hoc Working Group; O006 Rotated 180
			2	1327B FE02; Egyptian Ad-Hoc Working Group; O029 Rotated 270
			106	1327F FE00; Egyptian Ad-Hoc Working Group; O031 Rotated 90
			14	1327F FE01; Egyptian Ad-Hoc Working Group; O031 Rotated 180
			22	13285 FE00; Egyptian Ad-Hoc Working Group; O036 Rotated 90
			43	1328C FE00; Egyptian Ad-Hoc Working Group; O039 Rotated 90
			29	13296 FE03; Egyptian Ad-Hoc Working Group; O049 Rotated 45
			3	132A4 FE01; Egyptian Ad-Hoc Working Group; P008 Rotated 180
			1098	132A4 FE02; Egyptian Ad-Hoc Working Group; P008 Rotated 270
			6	132A4 FE04; Egyptian Ad-Hoc Working Group; P008 Rotated 315
			85	132AA FE00; Egyptian Ad-Hoc Working Group; Q003 Rotated 90
			79	132CB FE00; Egyptian Ad-Hoc Working Group; R024 Rotated 90
			1	132DC FE00; Egyptian Ad-Hoc Working Group; S010 Rotated 90
			3	132E7 FE00; Egyptian Ad-Hoc Working Group; S018 Rotated 90
			14	132E7 FE02; Egyptian Ad-Hoc Working Group; S018 Rotated 270
			7	132E9 FE02; Egyptian Ad-Hoc Working Group; S020 Rotated 270
			1	132F8 FE02; Egyptian Ad-Hoc Working Group; S033 Rotated 270

Unicode	JSesh	Rotated	Freq.	Listing
			2	132FD FE02; Egyptian Ad-Hoc Working Group; S037 Rotated 270
			107	13302 FE02; Egyptian Ad-Hoc Working Group; S042 Rotated 270
			2	13303 FE02; Egyptian Ad-Hoc Working Group; S043 Rotated 270
			2	13307 FE00; Egyptian Ad-Hoc Working Group; T001 Rotated 90
			1	13308 FE03; Egyptian Ad-Hoc Working Group; T002 Rotated 30
			6	13308 FE01; Egyptian Ad-Hoc Working Group; T002 Rotated 180
			4	13310 FE02; Egyptian Ad-Hoc Working Group; T008 Rotated 270
			2	13311 FE02; Egyptian Ad-Hoc Working Group; T008A Rotated 270
			1	13312 FE01; Egyptian Ad-Hoc Working Group; T009 Rotated 180
			3	13312 FE02; Egyptian Ad-Hoc Working Group; T009 Rotated 270
			0	13313 FE01; Egyptian Ad-Hoc Working Group; T009A Rotated 180
			1	13313 FE02; Egyptian Ad-Hoc Working Group; T009A Rotated 270
			2	13314 FE01; Egyptian Ad-Hoc Working Group; T010 Rotated 180
			14	13314 FE02; Egyptian Ad-Hoc Working Group; T010 Rotated 270
			5	1331B FE00; Egyptian Ad-Hoc Working Group; T016 Rotated 90
			1	1331B FE01; Egyptian Ad-Hoc Working Group; T016 Rotated 180
			11	1331C FE02; Egyptian Ad-Hoc Working Group; T016A Rotated 270
			3	13321 FE01; Egyptian Ad-Hoc Working Group; T021 Rotated 180
			27	13321 FE02; Egyptian Ad-Hoc Working Group; T021 Rotated 270
			1	13322 FE00; Egyptian Ad-Hoc Working Group; T022 Rotated 90
			1	13322 FE01; Egyptian Ad-Hoc Working Group; T022 Rotated 180
			2	1332B FE04; Egyptian Ad-Hoc Working Group; T031 Rotated 340
			1	13331 FE01; Egyptian Ad-Hoc Working Group; T035 Rotated 180
			57	13331 FE02; Egyptian Ad-Hoc Working Group; T035 Rotated 270
			3	1333B FE03; Egyptian Ad-Hoc Working Group; U007 Rotated 20
			5	1333B FE00; Egyptian Ad-Hoc Working Group; U007 Rotated 90
			1	1333C FE00; Egyptian Ad-Hoc Working Group; U008 Rotated 90

Unicode	JSesh	Rotated	Freq.	Listing
			64	1334A FE02; Egyptian Ad-Hoc Working Group; U022 Rotated 270
			1	13361 FE02; Egyptian Ad-Hoc Working Group; U042 Rotated 270
			6	13362 FE04; Egyptian Ad-Hoc Working Group; V001 Rotated 320
			25	13370 FE04; Egyptian Ad-Hoc Working Group; V005 Rotated 320
			2	13371 FE05; Egyptian Ad-Hoc Working Group; V006 Rotated 110
			14	13373 FE02; Egyptian Ad-Hoc Working Group; V007A Rotated 270
			74	13377 FE00; Egyptian Ad-Hoc Working Group; V010 Rotated 90
			3	13378 FE00; Egyptian Ad-Hoc Working Group; V011 Rotated 90
			2	1337D FE03; Egyptian Ad-Hoc Working Group; V012A Rotated 45
			1	1337D FE02; Egyptian Ad-Hoc Working Group; V012A Rotated 270
			1	13382 FE04; Egyptian Ad-Hoc Working Group; V016 Rotated 330
			3	13385 FE02; Egyptian Ad-Hoc Working Group; V019 Rotated 270
			3	13399 FE00; Egyptian Ad-Hoc Working Group; V026 Rotated 90
			5	1339A FE00; Egyptian Ad-Hoc Working Group; V027 Rotated 90
			1	133A4 FE04; Egyptian Ad-Hoc Working Group; V033 Rotated 330
			7	133AF FE02; Egyptian Ad-Hoc Working Group; W001 Rotated 270
			7	133B0 FE02; Egyptian Ad-Hoc Working Group; W002 Rotated 270
			1	133BF FE02; Egyptian Ad-Hoc Working Group; W014 Rotated 270
			28	133D3 FE00; Egyptian Ad-Hoc Working Group; X004A Rotated 90
			36	133DD FE02; Egyptian Ad-Hoc Working Group; Y002 Rotated 270
			2	133F2 FE00; Egyptian Ad-Hoc Working Group; Z007 Rotated 90
			56	133F2 FE04; Egyptian Ad-Hoc Working Group; Z007 Rotated 335
			5	133F5 FE00; Egyptian Ad-Hoc Working Group; Z010 Rotated 90
			1	133F6 FE00; Egyptian Ad-Hoc Working Group; Z011 Rotated 90
			1	13403 FE00; Egyptian Ad-Hoc Working Group; Z015I Rotated 90
			1	1340D FE04; Egyptian Ad-Hoc Working Group; AA001 Rotated 315
			1	1340E FE04; Egyptian Ad-Hoc Working Group; AA002 Rotated 330

Unicode	JSesh	Rotated	Freq.	Listing
			1	13416 FE00; Egyptian Ad-Hoc Working Group; AA008 Rotated 90
			4	13419 FE03; Egyptian Ad-Hoc Working Group; AA011 Rotated 15
			33	13419 FE00; Egyptian Ad-Hoc Working Group; AA011 Rotated 90
			1	13419 FE01; Egyptian Ad-Hoc Working Group; AA011 Rotated 180
			135	13419 FE02; Egyptian Ad-Hoc Working Group; AA011 Rotated 270
			8	13419 FE04; Egyptian Ad-Hoc Working Group; AA011 Rotated 345
			15	1341A FE00; Egyptian Ad-Hoc Working Group; AA012 Rotated 90
			7	13423 FE00; Egyptian Ad-Hoc Working Group; AA021 Rotated 90
			10	1342C FE02; Egyptian Ad-Hoc Working Group; AA030 Rotated 270
			5	1342E FE02; Egyptian Ad-Hoc Working Group; AA032 Rotated 270