

ELLIPTICAL DOMES

There are 2 different basic triangles in the elliptical icosahedron and any breakdown will result in a different strut length in these two triangles. The tables contain separate information on each of these triangles.

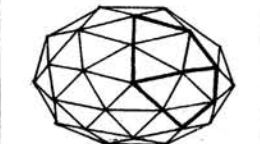
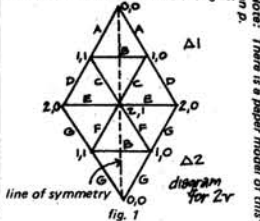


The expansion refers to the amount of distortion along the zenith-to-zenith pole (an expansion of 1 being a sphere, greater than 1 a stretched dome, and less than 1 a squashed).

Keep in mind that the chords to the left of the line of symmetry, fig. (1), are the same as the ones to the right and that the 2 basic triangles share certain chords in the last row. Length data can be used in the same way as on p. 108; the axial angles may be different at each end of the strut so the coordinate names which end of the strut the angle refers to. In construction the axial angles can be rounded off a degree or two for convenience, I am not publishing dihedral angles because they are rarely used (except in sun dome type construction) and would take up a lot of space. The face angles can be calculated using the law of cosines. If you need the dihedral angles, some special expansion, or frequency, write and I'll send them for computer costs.

ALTERNATE ELLIPTICAL

The vertices are labeled the same way as with the spherical, starting with 0,0 at each end of the two basic triangles.



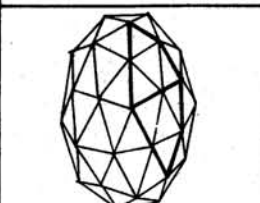
ALTERNATE BREAKDOWN

FREQUENCY = 2 EXPANSION = 0.61800 ZAFU

TRIANGLE 1			
LENGTH-A	1,0	0,0	.533771
AXIAL	0,0		80.0425
AXIAL	1,0		79.0533
LENGTH-B	1,1	1,0	.618033
AXIAL	1,0		77.8937
AXIAL	1,1		77.8937
LENGTH-C	2,1	1,0	.562773
AXIAL	1,0		76.5841
AXIAL	2,1		73.6152
LENGTH-D	2,0	1,0	.445083
AXIAL	1,0		76.8362
AXIAL	2,0		73.0428
LENGTH-E	2,1	2,0	.543035
AXIAL	2,1		76.6966
AXIAL	2,1		76.7847

TRIANGLE 2

LENGTH-B	1,1	1,0	.618033
AXIAL	1,0		72.0000
AXIAL	1,1		72.0000
LENGTH-F	2,1	1,0	.459493
AXIAL	1,0		65.4404
AXIAL	2,1		69.7881
LENGTH-G	2,0	1,0	.418429
AXIAL	1,0		69.0883
AXIAL	2,0		71.9685
LENGTH-G	1,0	0,0	.418429
AXIAL	0,0		71.9285
AXIAL	1,0		69.0883



ALTERNATE BREAKDOWN

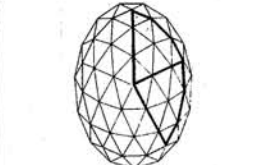
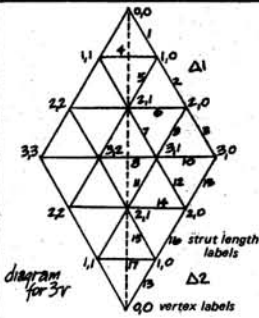
FREQUENCY = 2 EXPANSION = 1.61800 EGG

TRIANGLE 1			
LENGTH-A	1,0	0,0	.578607
AXIAL	0,0		65.3146
AXIAL	1,0		69.6860

LENGTH-B	1,1	1,0	.618033
AXIAL	1,0		65.4414
AXIAL	1,1		65.4414
LENGTH-C	2,1	1,0	.743487
AXIAL	1,0		69.7882
AXIAL	2,1		73.6147
LENGTH-D	2,0	1,0	.749689
AXIAL	1,0		74.4682
AXIAL	2,0		77.7135
LENGTH-E	2,1	2,0	.555683
AXIAL	2,0		73.3128
AXIAL	2,1		72.8299

TRIANGLE 2

LENGTH-B	1,1	1,0	.618033
AXIAL	1,0		72.0000
AXIAL	1,1		72.0000
LENGTH-F	2,1	1,0	.910576
AXIAL	1,0		77.8929
AXIAL	2,1		76.6934
LENGTH-G	2,0	1,0	.788849
AXIAL	1,0		79.0865
AXIAL	2,0		78.3322
LENGTH-G	1,0	0,0	.788849
AXIAL	0,0		78.3322
AXIAL	1,0		79.0865



ALTERNATE BREAKDOWN

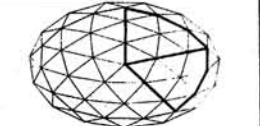
FREQUENCY = 3 EXPANSION = 1.61800 EGG

TRIANGLE 1			
LENGTH-1	1,0	0,0	.357081
AXIAL	0,0		74.0175
AXIAL	1,0		75.3841
LENGTH-2	2,0	1,0	.485463
AXIAL	1,0		75.5989
AXIAL	2,0		78.2050
LENGTH-3	3,0	2,0	.498249
AXIAL	2,0		81.4523
AXIAL	3,0		82.5144
LENGTH-4	1,1	1,0	.403548
AXIAL	1,0		72.5908
AXIAL	1,1		72.5908
LENGTH-5	2,1	1,0	.451555
AXIAL	1,0		73.7940
AXIAL	2,1		76.0435
LENGTH-6	2,1	2,0	.421274
AXIAL	2,0		75.7580
AXIAL	2,1		75.0177
LENGTH-7	3,1	2,1	.544692
AXIAL	2,1		78.4663
AXIAL	3,1		80.1690
LENGTH-8	3,2	3,1	.403547
AXIAL	3,1		77.2521
AXIAL	3,2		77.2521
LENGTH-9	3,1	2,0	.485463
AXIAL	2,0		78.2050
AXIAL	3,1		79.4306
LENGTH-10	3,1	3,0	.359094
AXIAL	3,0		79.5859
AXIAL	3,1		79.3353

TRIANGLE 2

LENGTH-11	3,1	2,1	.586029
AXIAL	2,1		81.5631
AXIAL	3,1		80.8866
LENGTH-12	3,1	2,0	.594565
AXIAL	2,0		82.0654
AXIAL	3,1		81.3884
LENGTH-13	1,0	0,0	.494368
AXIAL	0,0		82.4553
AXIAL	1,0		82.8739
LENGTH-13	3,0	2,0	.494368
AXIAL	2,0		82.8739
AXIAL	3,0		82.4553
LENGTH-14	2,1	2,0	.412910
AXIAL	2,0		78.0031
AXIAL	2,1		77.9811
LENGTH-15	2,1	1,1	.615626
AXIAL	1,1		81.9847
AXIAL	2,1		81.9701
LENGTH-16	2,0	1,0	.594565
AXIAL	1,0		82.0654
AXIAL	2,0		82.0654

LENGTH-17	1,0	1,0	.403548
AXIAL	1,0		78.2503
AXIAL	1,1		78.2503



ALTERNATE BREAKDOWN

FREQUENCY = 3 EXPANSION = 0.61800 ZAFU

TRIANGLE 1

LENGTH-1	1,0	0,0	.345326
AXIAL	0,0		83.7668
AXIAL	1,0		83.5152
LENGTH-2	2,0	1,0	.367465
AXIAL	1,0		81.8237
AXIAL	2,0		80.6379
LENGTH-3	3,0	2,0	.270413
AXIAL	2,0		80.5045
AXIAL	3,0		78.7365
LENGTH-4	1,1	1,0	.403548
AXIAL	1,0		82.5592
AXIAL	1,1		82.5592
LENGTH-5	2,1	1,0	.396438
AXIAL	1,0		82.0864
AXIAL	2,1		81.3232
LENGTH-6	2,1	2,0	.408974
AXIAL	2,0		81.2193
AXIAL	2,1		81.5911
LENGTH-7	3,1	2,1	.348879
AXIAL	2,1		80.1293
AXIAL	3,1		78.2346
LENGTH-8	3,2	3,1	.403547
AXIAL	3,1		80.2827
AXIAL	3,2		80.2827
LENGTH-9	3,1	2,0	.367465
AXIAL	2,0		80.6379
AXIAL	3,1		79.3178
LENGTH-10	3,1	3,0	.344527
AXIAL	3,0		81.1816
AXIAL	3,1		81.5156

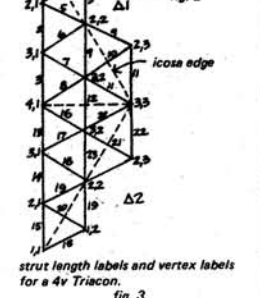
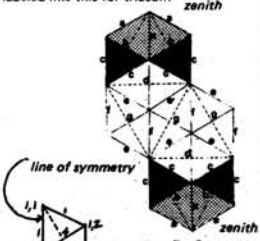
TRIANGLE 2

LENGTH-11	3,1	2,1	.322275
AXIAL	2,1		75.1273
AXIAL	3,1		77.2476
LENGTH-12	3,1	2,0	.300028
AXIAL	2,0		74.6243
AXIAL	3,1		76.8781
LENGTH-13	3,0	2,0	.273121
AXIAL	2,0		77.4455
AXIAL	3,0		78.8497
LENGTH-14	2,1	2,0	.412220
AXIAL	2,0		78.3222
AXIAL	2,1		78.4740
LENGTH-15	2,1	1,0	.300536
AXIAL	1,0		73.9513
AXIAL	2,1		74.0238
LENGTH-16	2,0	1,0	.300028
AXIAL	1,0		74.6243
AXIAL	2,0		74.6243
LENGTH-17	1,1	1,0	.403548
AXIAL	1,0		78.6308
AXIAL	1,1		78.6308

TRIACON ELLIPTICAL

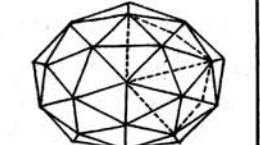
This diagram (fig. 2) demonstrates the congruent triangles and struts in a 2v. The same symmetries hold for the 4v with the additional fact that for the triangle 1's the edge of the icos (dotted lines) is also a line of symmetry and the struts repeated on both sides of it will be the same.

The vertices in the 2 basic triangles are labeled like this for triacon:



strut length labels and vertex labels for a 4v Triacon. fig. 3

For the strut length label for 2v see fig. (2) and for vertex labels use up to 2,2 on fig. (3). There is a paper model of the 2v expansion 0.618 on p. 124.

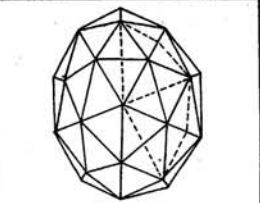


TRIACON BREAKDOWN

FREQUENCY = 2 EXPANSION = 0.61800 ZAFU

TRIANGLE 1

LENGTH-A	2,1	1,1	.620184
AXIAL	1,1		78.1926
AXIAL	2,1		76.5349
LENGTH-B	2,1	1,2	.713643
AXIAL	1,2		75.4669
AXIAL	2,1		75.4669
LENGTH-C	2,1	2,2	.579723
AXIAL	2,2		72.0687
AXIAL	2,1		75.5755
LENGTH-D	2,1	3,1	.530677
AXIAL	3,1		62.1713
AXIAL	2,1		70.2740
LENGTH-E	2,1	2,2	.607478
AXIAL	2,2		72.9138
AXIAL	2,1		70.8042
LENGTH-F	2,1	1,1	.420219
AXIAL	1,1		63.6429
AXIAL	2,1		60.2092
LENGTH-G	2,1	1,2	.649834
AXIAL	1,2		67.5946
AXIAL	2,1		67.5946



TRIACON BREAKDOWN

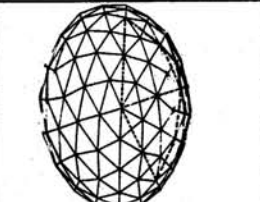
FREQUENCY = 2 EXPANSION = 1.61800 EGG

TRIANGLE 1

LENGTH-A	2,1	1,1	.692035
AXIAL	1,1		61.3078
AXIAL	2,1		67.6662
LENGTH-B	2,1	1,2	.713643
AXIAL	1,2		62.8067
AXIAL	2,1		62.8067
LENGTH-C	2,1	2,2	.778458
AXIAL	2,2		73.6339
AXIAL	2,1		70.2562
LENGTH-D	2,1	3,1	1.05144
AXIAL	3,1		75.8262
AXIAL	2,1		71.9315

TRIANGLE 2

LENGTH-E	2,1	2,2	.720932
AXIAL	2,2		72.2865
AXIAL	2,1		73.2628
LENGTH-F	2,1	1,1	1.03086
AXIAL	1,1		77.7145
AXIAL	2,1		78.3811
LENGTH-G	2,1	1,1	1.03086
AXIAL	1,1		77.7145
AXIAL	2,1		78.3811
LENGTH-H	2,1	1,2	.858508
AXIAL	1,2		72.5488
AXIAL	2,1		72.5488



TRIACON BREAKDOWN

FREQUENCY = 4 EXPANSION = 1.61800 EGG

TRIANGLE 1			
LENGTH-1	2,1	1,1	.291222
AXIAL	1,1		76.8189
AXIAL	2,1		77.6136
LENGTH-2	3,1	2,1	.418726
AXIAL	2,1		76.1561
AXIAL	3,1		78.3853
LENGTH-3	4,1	3,1	.498661
AXIAL	3,1		80.2670
AXIAL	4,1		81.6644

LENGTH-4	2,1	1,2	.333333
AXIAL	1,2		75.3061
AXIAL	2,1		75.3061
LENGTH-5	2,1	2,2	.382492
AXIAL	2,2		77.0644
AXIAL	2,1		75.3257
LENGTH-6	3,1	2,2	.369767
AXIAL	2,2		76.1465
AXIAL	3,1		76.8214
LENGTH-7	3,1	3,2	.416405
AXIAL	3,2		79.4932
AXIAL	3,1		78.3196
LENGTH-8	4,1	3,2	.382492
AXIAL	3,2		78.9312
AXIAL	4,1		79.4683
LENGTH-9	3,2	2,2	.450817
AXIAL	2,2		79.0514
AXIAL	3,2		80.6253
LENGTH-10	3,2	2,3	.333333
AXIAL	2,3		78.9158
AXIAL	3,2		78.9158
LENGTH-11	3,2	3,3	.372230
AXIAL	3,3		83.2369
AXIAL			