Super Z Ferrule Dimensions for Machining

by

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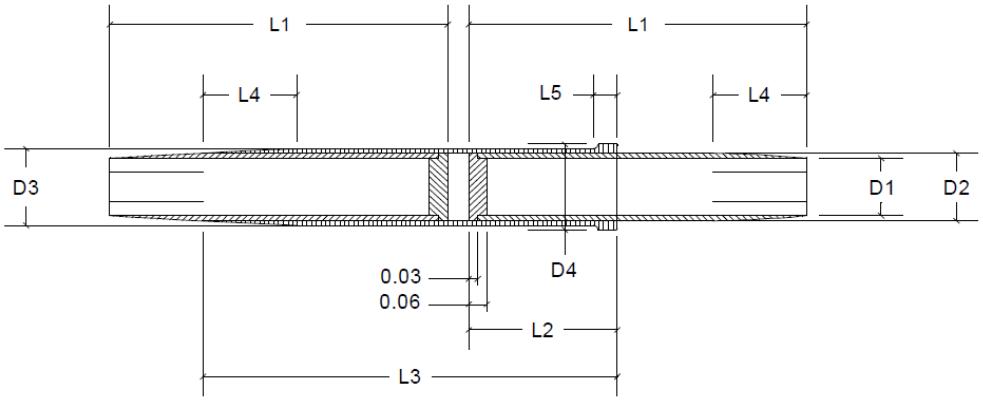
Below is the standard information that can be found on the dimensions of Super Z ferrules. They are as originally designed by the inventor Louis Feierabend. They were intended to be assembled from nickel silver tubing. Currently such tubing is unavailable at reasonable prices, so the current practice is to machine them from solid stock, either 19% nickel silver or C642 aluminum bronze, a.k.a. Duronze. The diameters in the table are a little peculiar from the point of view of machining and perhaps have to do with the tubing diameters available when first designed. So here is how they are rationalized for machining. They come in steps of 1/64 inches. So D1 as in the table is the nominal size of the bamboo in 64ths. D2 is D1 + 2/64, D3 is D1 + 4/64 and D4 is D1 + 6/64. Thus the male ferrule will have a 1/64 wall thickness except in the L4 taper region where it is tapered and slitted. The L4 on the left in the diagram below is obviously in the wrong place. The female will have a 1/64 wall in the slide region (where the male is inserted) and 2/64 til the end where it is tapered and slitted.



		D1		D2		D3		D4						
NO.	NOM.	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	L1	L2	L3	L4	L5
8	0.125	0.125	0.127	0.160	0.164	0.192	0.196	0.223	0.227	0.690	0.400	0.850	0.190	0.030
9	0.141	0.141	0.143	0.176	0.180	0.207	0.211	0.233	0.242	0.780	0.450	0.950	0.220	0.040
10	0.156	0.156	0.158	0.192	0.196	0.225	0.227	0.256	0.255	0.860	0.500	1.050	0.240	0.050
11	0.172	0.172	0.174	0.207	0.211	0.238	0.242	0.270	0.274	0.950	0.550	1.170	0.250	0.060
12	0.188	0.188	0.190	0.223	0.227	0.254	0.258	0.285	0.289	1.040	0.600	1.270	0.290	0.070
13	0.203	0.203	0.205	0.233	0.242	0.270	0.274	0.301	0.305	1.120	0.650	1.380	0.310	0.080
14	0.215	0.219	0.221	0.254	0.258	0.285	0.289	0.317	0.321	1.210	0.700	1.490	0.340	0.090
15	0.234	0.234	0.236	0.270	0.274	0.301	0.305	0.332	0.336	1.300	0.750	1.590	0.360	0.110
16	0.250	0.250	0.252	0.285	0.289	0.317	0.321	0.345	0.350	1.380	0.800	1.700	0.390	0.120
17	0.266	0.266	0.268	0.301	0.305	0.332	0.336	0.363	0.367	1.470	0.850	1.800	0.410	0.140
18	0.281	0.281	0.283	0.317	0.321	0.348	0.352	0.379	0.383	1.580	0.900	1.910	0.430	0.150
19	0.297	0.297	0.299	0.332	0.336	0.363	0.367	0.394	0.399	1.640	0.950	2.020	0.460	0.170
20	0.313	0.313	0.315	0.348	0.352	0.379	0.383	0.410	0.414	1.730	1.000	2.130	0.480	0.180
21	0.328	0.328	0.330	0.363	0.367	0.394	0.398							
22	0.344	0.344	0.348	0.379	0.383	0.410	0.414							
23	0.359	0.359	0.361	0.394	0.398									
24	0.375	0.375	0.379	0.410	0.414									

Super Z Ferrule - Basic Dimensions

Imperial Measurements

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One of the problems with the table is that length dimensions are only given through size 20. Larger ones are needed for spey and switch rods. We can start by verifying with a little spreadsheet work that the lengths L1, L2, L3, L4, and L5 all vary linearly proportional to the nominal size through size 20. So we can easily calculate the larger lengths from this. One thing to notice is that the wall thickness as designed by Feierabend does not increase in proportion to the size. This seems a little scant in the larger sizes. My practice has been in the sizes 25 and up to increase the wall thickness in the female in the slide region from 1/64" to 1.5/64", that is from 0.156" to 0.234". So based on these considerations, below is the table I use for machining ferrules. The letters refer to dimension in the schematic diagram below.

	B	C	D	E	F	G	H	I	
Size	Bamboo Dia	Ferrule Slide Dia	Ferrule OD	Welt OD	Male Length	Slide Depth	Female Length	Slit Length	Estimated Weight(oz)
8	0.1250	0.1563	0.1875	0.2188	0.690	0.400	1.090	0.190	0.078
9	0.1406	0.1719	0.2031	0.2344	0.780	0.450	1.230	0.220	0.097
10	0.1563	0.1875	0.2188	0.2500	0.860	0.500	1.360	0.240	0.117
11	0.1719	0.2031	0.2344	0.2656	0.950	0.550	1.500	0.250	0.141
12	0.1875	0.2188	0.2500	0.2813	1.040	0.600	1.640	0.290	0.165
13	0.2031	0.2344	0.2656	0.2969	1.120	0.650	1.770	0.310	0.191
14	0.2188	0.2500	0.2813	0.3125	1.210	0.700	1.910	0.340	0.219
15	0.2344	0.2656	0.2969	0.3281	1.300	0.750	2.050	0.360	0.251
16	0.2500	0.2813	0.3125	0.3438	1.380	0.800	2.180	0.390	0.281
17	0.2656	0.2969	0.3281	0.3594	1.470	0.850	2.320	0.410	0.317
18	0.2813	0.3125	0.3438	0.3750	1.580	0.900	2.480	0.430	0.359
19	0.2969	0.3281	0.3594	0.3906	1.640	0.950	2.590	0.460	0.391
20	0.3125	0.3438	0.3750	0.4063	1.730	1.000	2.730	0.480	0.433
21	0.3281	0.3594	0.3906	0.4219	1.809	1.050	2.859	0.506	0.473
22	0.3438	0.3750	0.4063	0.4375	1.896	1.100	2.996	0.530	0.518
23	0.3594	0.3906	0.4219	0.4531	1.983	1.150	3.133	0.554	0.564
24	0.3750	0.4063	0.4375	0.4688	2.070	1.200	3.270	0.579	0.613
25	0.3906	0.4219	0.4688	0.4844	2.157	1.250	3.407	0.603	0.771
26	0.4063	0.4375	0.4844	0.5000	2.244	1.300	3.544	0.627	0.832
27	0.4219	0.4531	0.5000	0.5156	2.331	1.350	3.681	0.652	0.895
28	0.4375	0.4688	0.5156	0.5313	2.418	1.400	3.818	0.676	0.960
29	0.4531	0.4844	0.5313	0.5469	2.505	1.450	3.955	0.700	1.027
30	0.4688	0.5000	0.5469	0.5625	2.592	1.500	4.092	0.724	1.097
31	0.4844	0.5156	0.5625	0.5781	2.679	1.550	4.229	0.749	1.169
32	0.5000	0.5313	0.5781	0.5938	2.766	1.600	4.366	0.773	1.244