

	A	B	C	D	E	F	G	H
1	I. Bocal	Long Wing 1	Short Wing 2	Original bocal; Floth1 Longer bocal meas. below				
2	dia reed end	4.4	4.4	inside diameter of reed end of bocal; 4.3mm				
3	bocal string length (0, 1)	24.3	24.3	length of bocal inserted into receiver; 24.3mm				
4	metal bocal length top (0, 1)	313	313	meas. along top of bocal; 323mm				
5	metal bocal length bot (0, 1)	293	293	meas. along bottom of bocal; 306mm				
6	dia wj end	10	10	inside diameter of bocal; 9.6mm				
7								
8	bocal logic	2	2	if bocal logic = 0 => bocal is choke; if bocal logic = 1 => choke in wing joint calc; if bocal logic = 2 => no bocal				
9				Floth1 Has two bocals in case, might be original				
10								
11								
12								
13	II. Wing Joint Lengths; Longer Wing			bocal receiver: Floth1 yes on wing joint 1 (longer)				
14	choke bore dia.	8.4	9.5	logic 1; bore diameter of choke; logic 0; either diameter bocal bottom or beginning of bore at bottom or receiver				
15	receiver length (1, 0) (formally choke length)	24.3	72	logic 1; length of choke from top of wing joint; logic 0; length of receiver (same as string length)				
16	wing joint length	530	520	total wing joint length, including tenon and socket				
17	tenon length	42	42	tenon length(longer wing 39.3mm)				
18								
19	wj f2	236	232	dist top of wing to where tone hole enters bore [not at the center of the tone hole]				
20	wj e	296	291					
21	wj d	338	338					
22								
23	Bore dia. Bottom of wing joint	15.6	15.7	Need to Average, usally oval; Floth1 slightly				
24	Bore dia. top of boot joint small side	16.2	16.2					
25	Bore dia. top of boot joint large side	24.4	24.4					
26								
27	III. Boot Lengths							
28	bj logic	1	1	logic=> if bj logic = 0 => plug removed; if bj logic = 1 => plug cannot be removed				
29	bj c	84	84	dist from top of boot to where topmost tone hole enter bore [not at center of tone hole]				
30	bj b	135	135					
31	bj a	183	183					
32								
33	bistotal [Needed for both boot logics]	424	424	total length of boot, include socket, along the small bore side				
34	bjtotal [Needed for both boot logics]	424	424	total length of boot, include socket, along large bore side				
35	plug small [Need for logic 0 only]	0	0	plug thickness, large bore side				
36	plug large [Need for logic 0 only]	0	0	plug thickness, small bore side				
37								
38	boots [Needed for both boot logics]	382	382	hook length along s bore => bjs-septum length = boot - septum <= calc the septum				
39	bootl [Needed for both boot logics]	382	382	hook length along l bore => bjl-septum length = boot - septum <= calc the septum				
40								
41	boots bottom [Needed for both boot logics]	18.5	18.5	use hook, dist of bore [dist on stick plus 7mm, diff between hook and bot of stick] 7 + 11.5 + 18.5				
42	bootl bottom [Needed for both boot logics]	18.5	18.5	use hook, dist of bore [same as boots bot except tenon depth will be different]				
43								
44	extreme bore [Needed for logic 1 only]	42.3	42.3	Outside dia of plug [measured] = small bore dia + large bore dia + the septum width				
45								
46	septum length exp [Need for logic 0 only]	0	0	dist. from very bottom of boot to septum [point between the large and small bore]				
47	septum length calc - do not input value	42	42	dist. From very bottom of boot to septum [bjl - bootl]	do not input value			
48	septum length - do not input value	42	42	if bj logic = 0 => septum = septum exp; if bj logic = 1 => septum = septum calc	do not input value			
49								
50	sbore dia sep* [Needed for both boot logics]	17.6	17.6	septum small bore dia [assume = lbore dia sep]				
51	lbore dia sep* [Needed for both boot logics]	18.6	18.6	septum large bore dia [assume = sbore dia sep] [mesure if cork can be removed; for Logic 0]				
52	sep width exp [Need for logic 0 only]	0	0	septum width; direct measurement if remove plug				
53	sep width calc - do not input value	6.1	6.1	septum width; calc. => extreme bore - sbore - lbore	do not input value			
54	sep width - do not input value	6.1	6.1	if bj logic = 0 => sep width = sep width exp; if bj logic = 1 => sep width = sep width	do not input value			
55								
56	bj g	326	326	dist from top of boot (socket) to where G hole enters bore [not at cent of tone hole]				
57	bj f1	121	121	dist from top of boot (socket) to where F1 hole enters bore [not at cent of tone hole]				
58								
59								
60								
61								
62								
63	IV. Tone Hole Diameters; Longer Wing							
64	f2	5.4	5.4					
65	e	5.7	5.7					
66	d	5.5	5.5					
67								
68	c	7.6	7.6					
69	b	7.2	7.2					
70	a	6.4	6.4					
71	g	9	9					
72	f1	9.7	9.7					
73								
74	e1	10.8	10.8	e1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]				
75	d1	9.8	9.8	d1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]				
76	c1	11.1	11.1	c1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]				
77				Floth1 All three long joint ton holes totally round				
78								
79								
80								
81								
82	V. Tone Hole Depths: Wing 1 longer							
83	f2	25.5	25.2					
84	e	25.8	26.2					
85	d	28.4	33.5					
86								
87	c	21.4	21.4					
88	b	24	24					
89	a	25.5	25.5	Floth1 extreme downward angle				
90	g	13.3	13.3	meas along bot tone hole wall [north wall, toward reed,tone hole usually at angle]				
91	f1	21	21	meas along east side tone hole wall [north wall, toward reed,t hole usually at angle]				
92								
93	e1	7.6	7.6	e1 tone hole depth;meas east/west with deapth gauge [at center, or shortest dist]				
94	d1	7.5	7.5	d1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]				
95	c1	7.1	7.1	c1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]				
96								
97								
98								
99								
100								
101	VI. Long Joint			Floth1 There is a table along long joint:yes				
102	lg_length	607	607	total length of long joint				
103	lg_tenon_bot	41.8	41.8	length bottom tenon on long joint [tenon going into boot joint]				
104	li_bot_bore	23.5	23.5	long joint bottom tenon bore diameter [tenon going into boot joint]				

	A	B	C	D	E	F	G	H
105	lj_top_bore	30.9	30.9	long joint top tenon bore diameter [tenon going into bell]				
106	lg_tenon_top	32.3	32.3	length top tenon on long joint [tenon going into bell]				
107	e1_distance	57	57	dist long joint tenon to e1 [from bot of tenon to where tone hole enters bore]				
108	d1_distance	260	260	dist long joint tenon to d1 [from bot of tenon to where tone hole enters bore]				
109	c1_distance	521	521	dist long joint tenon to c1 [from bot of tenon to where tone hole enters bore]				
110								
111								
112								
113								
114								
115	VII. Bore diameters at Tone Holes							
116	f2	11.5	11.7					
117	e	12.5	13					
118	d	13.1	13.4					
119								
120	c	16.6	16.6					
121	b	17.1	17.1					
122	a	17.4	17.4					
123	g	19.1	19.1					
124	f1	22.8	22.8					
125								
126	e1	24.3	24.3	e1 tone hole bore diameter on long joint				
127	d1	27.3	27.3	d1 tone hole bore diameter on long joint				
128	c1	29.2	29.2	c1 tone hole bore diameter on long joint				
129								
130								
131								
132								
133								
134	VIII. Bell			Floth1 There is tone hole in the bell: 4.5mm, 148 mm from bottom, include bell socket				
135	bell_logic	0	0	If bell_logic=0=>normal conical bore;if bell_logic=1=>inverted conical bore;if bell_logic=2=>bell expansion				
136	bell_length (0, 1, 2)	296	296	total length of bell [lines 141 + 144 = line 136]				
137	bell_bot_bore (0, 1, 2)	31.5	31.5	dia bore at the bottom of bell [end with socket]				
138	bell_top_bore 0, (1, 0, 2)	38.2	38.2	dia bore at the top of bell [where low Bb exits]				
139	bell_center_bore (only for logic 2)			dia bore at max center of expansion				
140	bell_wall (only for logic 2)			bell wall thickness, Just for David				
141	bell_bot_bore_expansion (only for logic 2)			dist of bottom to maxium of expansion [including bell socket length,if bell_logic=0 => 100]				
142	Outside diameter of wood at expansion			Just for David				
143	bell_tenon (0, 1, 0, 2)	32.2	32.2	bell socket length				
144	bell_expansion_length (only for logic 2)			distance of maxium expansion to top of bell [where Bb exits]				
145	bellfg	49	49	Usually about 10mm more than line 138				
146								
147								
148	IX. PITCH							
149	pitch	430	430	input the historical pitch of the bassoon, must input value, best guess				
150	freq_init	380	380	Initial frequency range variable				
151	Delta frequency	2	2	frequency increment parameter				
152	Number of frequencies	60	60	number of frequencies to scan for min chi sq				
153	Frequency adjust	1.05	1.05	frequency adjustment parameter				
154	X. Title							
155	title			Bassoon Calculation: Floth1-O-Waterhouse-Wg1-WOB-DNM [longerwing]				
156								
157				Notes on long joint bore: Floth1 OOR in places				
158				Notes on boot joint bore: Floth1 normal				
159	XI. Bore Diameter Locations; Bocal 1 Longer			Notes on wing joint bore: Floth1 normal				
160		19	19	Number of diameters				
161		8.4	9.5	Initial bore diameter [do not include in line 160 counting]				
162		382	399	dist1; measured from the bottom of the wing joint- 10mm				1
163		317	327	dist2; measured from the bottom of the wing joint- 11mm				1
164		258	269	dist3; measured from the bottom of the wing joint- 12mm				1
165		197	230	dist4; measured from the bottom of the wing joint- 13mm				1
166		110	135	dist5; measured from the bottom of the wing joint- 14mm				1
167		9	60	dist6; measured from the bottom of the wing joint- 15mm	Bottom wing jt	15.6		1
168		0	0	dist7; measured from the top of the bootjoint - small bore side- 16mm	top boot small	16.2		2
169		118	118	dist8; measured from the top of the bootjoint - small bore side- 17mm	top boot large	24.4		2
170		0	0	dist9; measured from the top of the bootjoint - small bore side- 18mm				2
171		350	350	dist10; measured from the top of the bootjoint - large bore side- 19mm	sbore dia sep	17.6		3
172		305	305	dist11; measured from the top of the bootjoint - large bore side- 20mm	lbore dia sep	18.6		3
173		265	265	dist12; measured from the top of the bootjoint - large bore side- 21mm	Hook Length	382		3
174		192	192	dist13; measured from the top of the bootjoint - large bore side- 22mm				3
175		100	100	dist14; measured from the top of the bootjoint - large bore side- 23mm				3
176		565	565	dist15; measured from the top of the long joint - 24mm	lj_bot_bore	23.5		4
177		490	490	dist16; measured from the top of the long joint- 25mm				4
178		410	410	dist17; measured from the top of the long joint- 26mm				4
179		365	365	dist18; measured from the top of the long joint- 27mm				4
180		200	200	dist19; measured from the top of the long joint- 28mm				4
181		105	105	dist20; measured from the top of the long joint- 29mm				4
182		40	40	dist21; measured from the top of the long joint- 30mm				4
183		0	0	dist22; measured from the top of the long joint- 31mm;				4
184		0	0	dist23; measured from the top of the long joint- 32mm;	lj_top_bore	30.9		4