	A	B	C	D	E	F	G
1	**I. Bocal;**	Short Format	Name or maker of bocal: Origianal; RothIF1 no				
2	dia reed end		inside diameter of reed end of bocal				
3	bocal string length (0, 1)		length of bocal inserted into receiver				
4	metal bocal length top (0, 1)		meas. along top of bocal				
5	metal bocal length bot (0, 1)		meas. along bottom of bocal				
6	dia wj end		inside diameter of bocal				
7							
8	bocal logic	2	if bocal logic = 0 => bocal is choke; if bocal logic = 1 =>choke in wing joint calc; if bocal logic = 2 => no bocal				
9							
10			Bottom bocal dia is 11.5, very beginning of wood bore 9.6 where at the very bottom of shelf of receiver				
11							
12							
13	**II. Wing Joint Lengths**		bocal receiver length: [can be none] 34.5				
14	choke bore dia.	11.3	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)	80	logic 1; length of choke from top of wing joint; logic 0; length of receiver (same as string length)				
16	wing joint length	545	total wing joint length, including tenon and socket; Verified				
17	tenon length	37.5	tenon length				
18							
19	wj f2	237	dist top of wing to where tone hole enters bore [not at the center of the tone hole]				
20	wj e	291					
21	wj d	356					
22							
23	Bore dia. Bottom of wing joint	15.5	Need to Average, usally oval RothIF1 yes				
24	Bore dia. top of boot joint small side	17.6	RothIF1 very OOR				
25	Bore dia. top of boot joint large side	25.3					
26							
27	**III. Boot Lengths**						
28	bj logic	1	logic=> if bj logic = 0 => plug removed; if bj logic = 1 => plug cannot be removed				
29	bj c	87	dist from top of boot to where topmost tone hole enter bore [not at center of tone hole]				
30	bj b	150					
31	bj a	203					
32							
33	bjstotal [Needed for both boot logics]	437	total length of boot, include socket, along the small bore side				
34	bjltotal [Needed for both boot logics]	437	total length of boot, include socket, along large bore side				
35	plug small [Need for logic 0 only]	0	plug thickness, large bore side				
36	plug large [Need for logic 0 only]	0	plug thickness, small bore side				
37							
38	boots [Needed for both boot logics]	407	hook length along s bore => bjs-septum length = boot - septum <= calc the septum				
39	bootl [Needed for both boot logics]	407	hook length along l bore => bjl-septum length = boot - septum <= calc the septum				
40							
41	boots bottom [Needed for both boot logics]	16	use hook, dist of bore [dist on stick plus 7mm, diff between hook and bot of stick] 9 + 7= 16				
42	bootl bottom [Needed for both boot logics]	16	use hook, dist of bore [same as boots bot except tenon depth will be different]				
43							
44	extreme bore [Needed for logic 1 only]	43.6	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	dist. from very bottom of boot to septum [point between the large and small bore]				
47	septum length calc - do not imput value	30	dist. From very bottom of boot to spetum [bjl - bootl]	do not imput value			
48	septum length - do not imput value	30	if bj logic = 0 => septum = septum exp; if bj logic = 1 => septum = septum calc	do not imput value			
49							
50	sbore dia sep* [Needed for both boot logics]		septum small bore dia [assume = lbore dia sep]				
51	lbore dia sep* [Needed for both boot logics]		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	septum width; direct measurement if remove plug				
53	sep width calc - do not imput value	43.6	septum width; calc. => extreme bore - sbore - lbore	do not imput value			
54	sep width - do not imput value	43.6	if bj logic = 0 => sep width = sep width exp; if bj logic = 1 => sep width = sep wi	do not imput value			
55							
56	bj g	351	dist from top of boot (socket) to where G hole enters bore [not at cent of tone hole]				
57	bj f1	140	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**						
64	f2	6					
65	e	6.3					
66	d	5.8					
67							
68	c	6.9					
69	b	6.8					
70	a	6.5					
71	g	9.2					
72	f1	9.3					
73							
74	e1		e1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]				
75	d1	9.9	d1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]				
76	c1		c1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]				
77							
78							
79							
80							
81							
82	**V. Tone Hole Depths**						
83	f2						
84	e						
85	d						
86							
87	c						
88	b						
89	a						
90	g		meas along bot tone hole wall [north wall, toward reed,tone hole usually at angle]				
91	f1		meas along east side tone hole wall [north wall, toward reed,t hole usually at angle]				
92							
93	e1	6	e1 tone hole depth;meas east/west with deapth gauge [at center, or shortest dist]				
94	d1	6	d1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]				

	A	B	C	D	E	F	G
95	c1		c1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]				
96							
97							
98							
99							
100							
101	**VI. Long Joint**		RothIF1 there is a table on long joint				
102	lg_length	577	total length of long joint				
103	lg_tenon_bot	45.5	length bottom tenon on long joint [tenon going into boot joint] Verified				
104	lj_bot_bore	25.7	long joint bottom tenon bore diameter [tenon going into boot joint]				
105	lj_top_bore	33.7	RothIF1 OOR; long joint top tenon bore diameter [tenon going into bell]				
106	lg_tenon_top	35.3	length top tenon on long joint [tenon going into bell] Verified				
107	e1 distance	55	dist long joint tenon to e1 [from bot of tenon to where tone hole enters bore]				
108	d1 distance	252	dist long joint tenon to d1 [from bot of tenon to where tone hole enters bore]				
109	c1 distance	445	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						
117	e						
118	d						
119							
120	c						
121	b						
122	a						
123	g						
124	f1						
125							
126	e1		e1 tone hole bore diameter on long joint				
127	d1		d1 tone hole bore diameter on long joint				
128	c1		c1 tone hole bore diameter on long joint				
129							
130							
131							
132							
133							
134	**VIII. Bell**						
135	bell logic	0	If bell_logic = 0 => normal conical bore; if bell_logic = 1 => inverted concial bore; if bell_logic = 2 => bell expansion				
136	bell_length (0, 1, 2)	325	RothIF1 vrfd long; total length of bell [lines 141 + 144 = line 136]				
137	bell_bot_bore (0, 1, 2)	31.7	dia bore at the bottom of bell [end with socket]				
138	bell_top_bore 0, (1, 0, 2)	35	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)	36.8	bell socket length				
144	bell_expansion_length (only for logic 2)		distance of top of expansion to top of bell or where top of expansion stops [where Bb exits]				
145	belflg	45	Usually about 10mm more than line 138				
146							
147							
148	**IX. PITCH**						
149	pitch	415	input the historical pitch of the bassoon, must input value, best guess				
150	freq_init	380	Initial frequency range variable				
151	Delta frequency	2	frequency increment parameter				
152	Number of frequencies	60	number of frequencies to scan for min chi sq				
153	Frequency adjust	1.05	frequency adjustment parameter				
154	**X. Title**						
155	title		Bassoon Calculation: Roth1-O-LinzMu129-Wg1-WOB-DNM				
156							
157							
158							
159	**XI. Bore Diameter Locations**						
160			Number of diameters				
161			Initial bore diameter				
162			dist1; measured from the bottom of the wing joint- 10mm				1
163			dist2; measured from the bottom of the wing joint- 11mm				1
164			dist3; measured from the bottom of the wing joint- 12mm				1
165			dist4; measured from the bottom of the wing joint- 13mm				1
166			dist5; measured from the bottom of the wing joint- 14mm				1
167			dist6; measured from the bottom of the wing joint- 15mm	Bottom wing jt	15.5		1
168			dist7; measured from the bottom of the wing joint- 16mm	top boot small	17.6		1
169			dist8; measured from the bottom of the wing joint - 17mm	top boot large	25.3		1
170			dist9; measured from the top of the bootjoint - small bore side- 18mm				1
171			dist10; measured from the top of the bootjoint - small bore side- 19mm	sbore dia sep	0		2
172			dist11; measured from the top of the bootjoint - large bore side- 20mm	lbore dia sep	0		3
173			dist12; measured from the top of the bootjoint - large bore side- 21mm				3
174			dist13; measured from the top of the bootjoint - large bore side- 22mm				3
175			dist14; measured from the top of the bootjoint - large bore side- 23mm				3
176			dist15; measured from the top of the bootjoint - large bore side- 24mm	lj_bot_bore	25.7		3
177			dist16; measured from the top of the bootjoint - large bore sidet- 25mm				3
178			dist17; measured from the top of the long joint- 26mm				4
179			dist18; measured from the top of the long joint- 27mm				4
180			dist19; measured from the top of the long joint- 28mm				4
181			dist20; measured from the top of the long joint- 29mm				4
182			dist21; measured from the top of the long joint- 30mm				4
183			dist22; measured from the top of the long joint- 31mm				4
184			dist23; measured from the top of the long joint- 32mm	lj_top_bore	33.7		4