	A	B	C	D	E	F	G
1	**I. Bocal**		Original bocal; SavPere7 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							
11							
12							
13	**II. Wing Joint Lengths**		bocal receiver: Savpere7, no; just a slight slelf where metal bocal receiver stops				
14	choke bore dia.	9.2	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)	35	logic 1; length of choke from top of wing joint; logic 0; length of receiver (same as string length)				
16	wing joint length	503	total wing joint length, including tenon and socket				
17	tenon length	47.7	tenon length				
18							
19	wj f2	198	Savpere7, vrfd; dist from bottom of wing (not top as usual) to where tone hole enters bore				
20	wj e	287					
21	wj d	328					
22							
23	Bore dia. Bottom of wing joint	15	Need to Average, usally oval; Savpere7 14.7 x 15.3				
24	Bore dia. top of boot joint small side	15.2					
25	Bore dia. top of boot joint large side	23					
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	88	dist from top of boot to where topmost tone hole enter bore [not at center of tone hole]				
30	bj b	155					
31	bj a	195					
32							
33	bjstotal [Needed for both boot logics]	432	total length of boot, include socket, along the small bore side				
34	bjltotal [Needed for both boot logics]	432	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]	390	hook length along s bore => bjs-septum length = boot - septum <= calc the septum				
39	bootl [Needed for both boot logics]	390	hook length along l bore => bjl-septum length = boot - septum <= calc the septum				
40							
41	boots bottom [Needed for both boot logics]	27	use hook, dist of bore [dist on stick plus 7mm, diff between hook and bot of stick] 20 + 7 =27				
42	bootl bottom [Needed for both boot logics]	27	use hook, dist of bore [same as boots bot except tenon depth will be different]				
43							
44	extreme bore [Needed for logic 1 only]	41.5	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	42	dist. From very bottom of boot to spetum [bjl - bootl]	do not imput value			
48	septum length - do not imput value	42	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]	18.3	septum small bore dia [assume = lbore dia sep]				
51	lbore dia sep* [Needed for both boot logics]	18.8	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	4.4	septum width; calc. => extreme bore - sbore - lbore	do not imput value			
54	sep width - do not imput value	4.4	if bj logic = 0 => sep width = sep width exp; if bj logic = 1 => sep width = sep width	do not imput value			
55							
56	bj g	335	dist from top of boot (socket) to where G hole enters bore [not at cent of tone hole]				
57	bj f1	143	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	5.2					
65	e	6.6					
66	d	5.2					
67							
68	c	7.3					
69	b	6.9					
70	a	5.9					
71	g	9.7					
72	f1	9.5					
73			Savpere7, three long joint tone holes all round, not oblong				
74	e1	14.2	e1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]				
75	d1	9.5	d1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater];				
76	c1	13.5	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**		Savpere7, very long tone holes				
83	f2	45.5	Savpere7, vrfd, F tone holes drilled at very extreme angle				
84	e	38.5					
85	d	36.7	Savpere7, D tone holes drilled at fairly extreme angle				
86							
87	c	26	Savpere7, vrfd				
88	b	28					
89	a	29.3	Savpere7, A tone holes drilled at fairly extreme angle				
90	g	15.8	meas along bot tone hole wall [north wall, toward reed,tone hole usually at angle]				
91	f1	23.8	meas along east side tone hole wall [north wall, toward reed,t hole usually at angle]				
92							
93	e1	9	e1 tone hole depth;meas east/west with deapth gauge [at center, or shortest dist]				

	A	B	C	D	E	F	G
94	d1	10.5	d1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]				
95	c1	9.8	c1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]				
96							
97							
98							
99							
100							
101	**VI. Long Joint**		Savpere7, There is a table along long joint				
102	lg_length	578	Savpere7, vrfd short; total length of long joint				
103	lg_tenon_bot	47	length bottom tenon on long joint [tenon going into boot joint]				
104	lj_bot_bore	23.9	long joint bottom tenon bore diameter [tenon going into boot joint]				
105	lj_top_bore	32.5	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]				
107	e1 distance	53	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	466	Savpere7, vrfd short, 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					
117	e	12.6					
118	d	13.1					
119							
120	c	14.9	Savpere7, vrfd				
121	b	16					
122	a	16.2					
123	g	19.4					
124	f1	21.7					
125							
126	e1	25.1	e1 tone hole bore diameter on long joint				
127	d1	27.5	d1 tone hole bore diameter on long joint				
128	c1	30.5	c1 tone hole bore diameter on long joint				
129							
130							
131							
132							
133							
134	**VIII. Bell**		Bell tone hole:Savpere7 No				
135	bell logic	0	If bell_logic = 0 => normal conical; if bell_logic = 1 =>inverted concial; if bell_logic = 2=>bell expans				
136	bell_length (0, 1, 2)	331	total length of bell [lines 141 + 144 = line 136]				
137	bell_bot_bore (0, 1, 2)	32.4	dia bore at the bottom of bell [end with socket]				
138	bell_top_bore 0, (1, 0, 2)	32.8	Savpere7, 32.5 x 33.1; 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)	36.1	bell socket length				
144	bell_expansion_length (only for logic 2)		distance of maxium expansion to top of bell [where Bb exits]				
145	Bellflg	42.1					
146							
147							
148	**IX. PITCH**						
149	pitch	430	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: Savarypère7-O-Kopp-Wg1-WOB-DNM				
156			Dated on boot 1818				
157			Notes on long joint bore: Savpere7, out of round in places				
158			Notes on boot joint bore: Savpere7, good				
159	**XI. Bore Diameter Locations**		Notes on wing joint bore: Savpere7, Normal				
160		21	Number of diameters				
161	**Bell Bore**	9.2	Initial bore diameter				
162	32.4mm dia. at socket	415	dist1; measured from the bottom of the wing joint- 10mm				1
163	32mm rod 55mm from socket	335	dist2; measured from the bottom of the wing joint- 11mm				1
164	31mm rod 93mm from socket	280	dist3; measured from the bottom of the wing joint- 12mm				1
165	30mm rod 148mm from socket	188	dist4; measured from the bottom of the wing joint- 13mm				1
166	29.5mm rod 160mm from socket	110	Savpere7, vrfd; dist5; measured from the bottom of the wing joint- 14mm				1
167	30mm rod 118mm from top of bell	0	dist6; measured from the bottom of the wing joint- 15mm	Bottom wing jt	15		1
168	31mm rod 80mm from top of bell	170	Savpere7, OOR 160 x 180; dist7; measured from the top of the bootjoint - small bore	top boot small	15.2		2
169	32mm rod 33mm from top of bell	245	dist8; measured from the top of the bootjoint - small bore side- 17mm	top boot large	23		2
170	32.8mm dia.at bell end	330	Savpere7, OOR 320 x 340, dist9; measured from the top of the bootjoint - small bore side- 18mm				2
171		380	dist10; measured from the top of the bootjoint - large bore side- 19mm	sbore dia sep	18.3		3
172		320	dist11; measured from the top of the bootjoint - large bore side- 20mm	lbore dia sep	18.8		3
173		200	dist12; measured from the top of the bootjoint - large bore side- 21mm				3
174		152	dist13; measured from the top of the bootjoint - large bore side- 22mm				3
175		0	dist14; measured from the top of the bootjoint - large bore side- 23mm				3
176		550	dist15; measured from the top of the long joint - 24mm	lj_bot_bore	23.9		4
177		527	dist16; measured from the top of the long joint- 25mm				4
178		484	dist17; measured from the top of the long joint- 26mm				4
179		368	Savpere7, OOR 345 x 390; dist18; measured from the top of the long joint- 27mm				4
180		250	Savpere7, vrfd, OOR 240 x 260; dist19; measured from the top of the long joint- 28mm; verified				4
181		170	Savpere7, OOR 160 x 180; dist20; measured from the top of the long joint- 29mm; verified				4
182		135	Savpere7, OOR 120 x 150; dist21; measured from the top of the long joint- 30mm				4
183		95	dist22; measured from the top of the long joint- 31mm				4
184		30	dist23; measured from the top of the long joint- 32mm	lj_top_bore	32.5		4