	A	B	C	D	E	F	G
1	**I. Bocal**		Original bocal;Tabard1 Probably not				
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**		bocal receiver: Tabard1 no receiver; top of wing replaced with bone (or ivory)				
14	choke bore dia.	9.4	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)	30	logic 1; length of choke from top of wing joint; logic 0; length of receiver (same as string length)				
16	wing joint length	488	total wing joint length, including tenon and socket;				
17	tenon length	49.8	tenon length				
18							
19	wj f2	211	dist top of wing to where tone hole enters bore [not at the center of the tone hole]				
20	wj e	282	Tabard1, all three wing finger holes have brass tubes, some extend into bore				
21	wj d	336					
22							
23	Bore dia. Bottom of wing joint	15.8	Need to Average, Tabard1 no				
24	Bore dia. top of boot joint small side	16.5	Tabard1 vrfd				
25	Bore dia. top of boot joint large side	25.6					
26							
27	**III. Boot Lengths**		Tabard1 Used Logic 1; could not remove plug				
28	bj logic	1	logic=> if bj logic = 0 => plug removed; if bj logic = 1 => plug cannot be removed				
29	bj c	114	dist from top of boot to where topmost tone hole enter bore [not at center of tone hole]				
30	bj b	176					
31	bj a	220					
32							
33	bjstotal [Needed for both boot logics]	398	Tabard1, vrfd could not remove boot cap; total length of boot, include socket, along the small bore side				
34	bjltotal [Needed for both boot logics]	398	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			Tabard1 because of U-tube, hook length is the same as total boot length; hook length along s bore				
38	boots [Needed for both boot logics]	377	Tabard1, U-tube; hook length along s bore => bjs-septum length = boot - septum <= calc the septum				
39	bootl [Needed for both boot logics]	377	hook length along l bore => bjl-septum length = boot - septum <= calc the septum				
40							
41	boots bottom [Needed for both boot logics]	19	use hook, dist of bore [dist on stick plus 7mm, diff between hook and bot of stick] 12 + 7= 19				
42	bootl bottom [Needed for both boot logics]	19	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	Tabard1, could not meas. could not remove boot cap, used 42; Outside dia of plug [measured]				
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	21	dist. From very bottom of boot to spetum [bjl - bootl]	do not imput value			
48	septum length - do not imput value	21	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]	19.2	septum small bore dia [assume = lbore dia sep]				
51	lbore dia sep* [Needed for both boot logics]	19.4	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	3.4	septum width; calc. => extreme bore - sbore - lbore	do not imput value			
54	sep width - do not imput value	3.4	if bj logic = 0 => sep width = sep width exp; if bj logic = 1 => sep width = sep width calc	do not imput value			
55							
56	bj g	304	dist from top of boot (socket) to where G hole enters bore [not at cent of tone hole]				
57	bj f1	127	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**		Tabard1, all three wing finger holes have brass tubes				
64	f2	5.8					
65	e	6					
66	d	5.9					
67							
68	c	8.8					
69	b	8					
70	a	7.1					
71	g	9.4					
72	f1	9.3					
73							
74	e1	12.5	e1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]				
75	d1	11.5	d1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]				
76	c1	17.5	Tabard1, vrfd large; 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	43					
84	e	38.8	Tabard1, tone lined with brass tube that extends into bore				
85	d	45.5					
86							
87	c	26.5					
88	b	27.3					
89	a	27.7					
90	g	17	meas along bot tone hole wall [north wall, toward reed,tone hole usually at angle]				
91	f1	20	meas along east side tone hole wall [north wall, toward reed,t hole usually at angle]				
92							
93	e1;	10	Tabard1 vrfd, long, a thick tenon replacement; e1 tone hole depth; meas east/west with deapth gauge				
94	d1	8	Tabard1, could not remove low C key; d1 tone hole depth; meas east/west with deapth gauge				
95	c1	4	Tabard1, vrfd thin, because of boring down of tone hole seat; c1 tone hole depth;				
96							
97							
98							
99							
100							
101	**VI. Long Joint**		Tabard1 There is a table alone long joint				
102	lg_length	618	total length of long joint				

	A	B	C	D	E	F	G
103	lg_tenon_bot	46.6	Tabard1; a ebony replacement, very small; length bottom tenon on long joint [tenon going into boot joint]				
104	lj_bot_bore	17.5	Tabard1; a ebony replacement; long joint bottom tenon bore diameter [tenon going into boot joint]				
105	lj_top_bore	34	long joint top tenon bore diameter [tenon going into bell]				
106	lg_tenon_top	41.2	length top tenon on long joint [tenon going into bell]				
107	e1 distance	79	dist long joint tenon to e1 [from bot of tenon to where tone hole enters bore]				
108	d1 distance	313	dist long joint tenon to d1 [from bot of tenon to where tone hole enters bore]				
109	c1 distance	543	Tabard1 vrfd; 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	11.9					
117	e	12					
118	d	13.4					
119							
120	c	17					
121	b	17.5					
122	a	17.8					
123	g	21.7					
124	f1						
125							
126	e1		e1 tone hole bore diameter on long joint				
127	d1	29.3	d1 tone hole bore diameter on long joint				
128	c1	32.5	c1 tone hole bore diameter on long joint				
129							
130							
131							
132							
133							
134	**VIII. Bell**		Tabard1 There is not a tone hole in the bell				
135	bell logic	1	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)	352	total length of bell [lines 141 + 144 = line 136]				
137	bell_bot_bore (0, 1, 2)	34.8	dia bore at the bottom of bell [end with socket]				
138	bell_top_bore 0, (1, 0, 2)	32.6	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)	41.6	bell socket length				
144	bell_expansion_length (only for logic 2)		distance of maxium expansion to top of bell [where Bb exits]				
145	belflg	42.1	Usually about 10mm more than line 138				
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: Tabard1-O-La Couture394				
156							
157			Notes on long joint; Tabard1 normal except for very small small tenon replacement plug				
158			Notes on boot joint bore: Tabard1, Normal				
159	**XI. Bore Diameter Locations**		Notes on wing joint bore: Tabard1, could not make many bore meas. tubes extending into bore				
160		19	Number of diameters				
161	**Bell Bore**	9.4	Initial bore diameter [do not include in line 160 counting]				
162	34.8mm dia. at socket	0	dist1; measured from the bottom of the wing joint- 10mm				1
163	34mm rod 170mm from socket	0	dist2; measured from the bottom of the wing joint- 11mm				1
164	33mm rod 295mm from socket	270	dist3; measured from the bottom of the wing joint- 12mm				1
165	32.6mm dia.at bell end	195	dist4; measured from the bottom of the wing joint- 13mm				1
166		118	dist5; measured from the bottom of the wing joint- 14mm				1
167		53	dist6; measured from the top of the bootjoint - small bore side- 15mm	Bottom wing jt	15.8		1
168		0	dist7; measured from the top of the bootjoint - small bore side- 16mm	top boot small	16.5		2
169		114	dist8; measured from the top of the bootjoint - small bore side- 17mm	top boot large	25.6		2
170		247	dist9; measured from the top of the bootjoint - small bore side- 18mm				2
171		305	dist10; measured from the top of the bootjoint - large bore side- 19mm	sbore dia sep	19.2		2
172		360	dist11; measured from the top of the bootjoint - large bore side- 20mm	lbore dia sep	19.4		3
173		331	dist12; measured from the top of the bootjoint - large bore side- 21mm	Hook Length	377		3
174		295	dist13; measured from the top of the bootjoint - large bore side- 22mm				3
175		200	Tabard1, vrfd gap; dist14; measured from the top of the bootjoint - large bore side- 23mm				3
176		145	dist15; measured from the top of the long joint- 24mm	lj_bot_bore	17.5		3
177		82	dist16; measured from the top of the long joint- 25mm				3
178		0	dist17; measured from the top of the long joint- 26mm				4
179		514	dist18; measured from the top of the long joint- 27mm				4
180		398	Tabard1, vrfd gap; dist19; measured from the top of the long joint- 28mm				4
181		340	dist20; measured from the top of the long joint- 29mm				4
182		220	Tabard1, vrfd gap; dist21; measured from the top of the long joint- 30mm				4
183		155	dist22; measured from the top of the long joint- 31mm				4
184	45; 33mm rod	90	dist23; measured from the top of the long joint- 32mm	lj_top_bore	34		4