	A	B	C	D	E	F	G
1	**I. Bocal**		Original bocal; DeBruijn1 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: DeBruijn1 yes; but this is a repair, the choke is futher down the bore from the brass insert				
14	choke bore dia.	11.1	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)	75	logic 1; length of choke from top of wing joint; logic 0; length of receiver (same as string length)				
16	wing joint length	560	total wing joint length, including tenon and socket				
17	tenon length	50.5	tenon length				
18							
19	wj f2	245	dist top of wing to where tone hole enters bore [not at the center of the tone hole]				
20	wj e	305					
21	wj d	350					
22							
23	Bore dia. Bottom of wing joint	17	Need to Average, usally oval; DeBruijn1 no				
24	Bore dia. top of boot joint small side	17.1					
25	Bore dia. top of boot joint large side	25.1					
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	79	dist from top of boot to where topmost tone hole enter bore [not at center of tone hole]				
30	bj b	137					
31	bj a	181					
32							
33	bjstotal [Needed for both boot logics]	442	total length of boot, include socket, along the small bore side				
34	bjltotal [Needed for both boot logics]	442	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]	399	hook length along s bore => bjs-septum length = boot - septum <= calc the septum				
39	bootl [Needed for both boot logics]	399	hook length along l bore => bjl-septum length = boot - septum <= calc the septum				
40							
41	boots bottom [Needed for both boot logics]	23	use hook, dist of bore [dist on stick plus 7mm, diff between hook and bot of stick] 16 + 7=23				
42	bootl bottom [Needed for both boot logics]	23	use hook, dist of bore [same as boots bot except tenon depth will be different]				
43			DeBruijn1, Two round plug design: NO.				
44	extreme bore [Needed for logic 1 only]	45.7	Outside dia of plug [measured] = small bore dia + large bore dia + the septum width				
45							
46	septum length exp [Need for logic 0 only]		dist. from very bottom of boot to septum [point between the large and small bore]				
47	septum length calc - do not imput value	43	dist. From very bottom of boot to spetum [bjl - bootl]	do not imput value			
48	septum length - do not imput value	43	if bj logic = 0 => septum = septum exp; if bj logic = 1 => septum = septum c	do not imput value			
49							
50	sbore dia sep* [Needed for both boot logics]	20.5	DeBruijn1 vrfd; septum small bore dia [assume = lbore dia sep]				
51	lbore dia sep* [Needed for both boot logics]	21.2	DeBruijn1 vrfd; septum large bore dia [assume = sbore dia sep]				
52	sep width exp [Need for logic 0 only]		septum width; direct measurement if remove plug				
53	sep width calc - do not imput value	4	septum width; calc. => extreme bore - sbore - lbore	do not imput value			
54	sep width - do not imput value	4	if bj logic = 0 => sep width = sep width exp; if bj logic = 1 => sep width = sep	do not imput value			
55							
56	bj g	346	dist from top of boot (socket) to where G hole enters bore [not at cent of tone hole]				
57	bj f1	131	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	6.5					
65	e	5.5					
66	d	5.4					
67							
68	c	9					
69	b	7.4					
70	a	5.8					
71	g	11					
72	f1	10.7					
73							
74	e1	12.8	e1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]				
75	d1	11	d1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]				
76	c1	10	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	34	DeBruijn1, Tone holes not drilled at extreme angles, average				
84	e	27					
85	d	27					
86							
87	c	29					
88	b	28					
89	a	28.5					
90	g	17.3	meas along bot tone hole wall [north wall, toward reed,tone hole usually at angle]				
91	f1	22.2	meas along east side tone hole wall [north wall, toward reed,t hole usually at angle]				
92							
93	e1	9.1	e1 tone hole depth;meas east/west with deapth gauge [at center, or shortest dist]				

	A	B	C	D	E	F	G
94	d1	9.5	d1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]				
95	c1	9.4	c1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]				
96							
97							
98							
99							
100							
101	**VI. Long Joint**						
102	lg_length	598	total length of long joint				
103	lg_tenon_bot	51	length bottom tenon on long joint [tenon going into boot joint]				
104	lj_bot_bore	24.5	DeBruijn1 OOR 24 x 25; long joint bottom tenon bore diameter [tenon going into boot joint]				
105	lj_top_bore	30.4	DeBruijn1 OOR 30.7 x 30.1 long joint top tenon bore diameter [tenon going into bell]				
106	lg_tenon_top	41.8	length top tenon on long joint [tenon going into bell]				
107	e1 distance	69	dist long joint tenon to e1 [from bot of tenon to where tone hole enters bore]				
108	d1 distance	267	dist long joint tenon to d1 [from bot of tenon to where tone hole enters bore]				
109	c1 distance	448	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	11.8					
117	e	12.7					
118	d	13.2					
119							
120	c	17.3					
121	b	17.4					
122	a	17.4	DeBruijn1, vrfd, bore is almost cyn. At these three right hand tone holes				
123	g	21.8					
124	f1	24					
125							
126	e1	25.3	e1 tone hole bore diameter on long joint				
127	d1	28.7	d1 tone hole bore diameter on long joint				
128	c1	29.8	c1 tone hole bore diameter on long joint				
129							
130							
131							
132							
133							
134	**VIII. Bell**		DeBruijn1, no tone hole in the bell				
135	bell logic	0	If bell_logic = 0 => normal conical bore; if bell_logic = 1 => inverted concial bore				
136	bell_length (0, 1, 2)	318	total length of bell [lines 141 + 144 = line 136]				
137	bell_bot_bore (0, 1, 2)	31.4	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)	42	bell socket length				
144	bell_expansion_length (only for logic 2)		distance of maxium expansion to top of bell [where Bb exits]				
145	belflg	56.1	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:DeBruijn1-O-BrusMIM997-Wg1-WOB-DNM				
156							
157			Notes on long joint bore: DeBruijn1 OOR in places				
158			Notes on boot joint bore: DeBruijn1 normal				
159	**XI. Bore Diameter Locations**		Notes on wing join boret: DeBruijn1 normal				
160		15	Number of diameters				
161	**Bell Bore**	11.1	Initial bore diameter				
162	31.4mm dia. at socket	0	dist1; measured from the bottom of the wing joint- 10mm				1
163	31mm rod 110mm from socket OOR	0	dist2; measured from the bottom of the wing joint- 11mm				1
164	30.5mm rod 125mm from socket	300	dist3; measured from the bottom of the wing joint- 12mm				1
165	30.5mm rod 175mm from bell top	243	dist4; measured from the bottom of the wing joint- 13mm				1
166	31mm rod 145mm from bell top OOR	80	DeBruijn1 vrfd; dist5; measured from the bottom of the wing joint- 14mm				1
167	32mm rod 80mm from bell top	50	dist6; measured from the bottom of the wing joint- 15mm	Bottom wing jt	17		1
168	32.6mm dia.at bell end	18	dist7; measured from the bottom of the wing joint- 16mm	top boot small	17.1		1
169		0	dist8; measured from the bottom of the wing joint- 17mm	top boot large	25.1		1
170		175	dist9; measured from the top of the bootjoint - small bore side- 18mm				1
171		240	dist10; measured from the top of the bootjoint - small bore side- 19mm	sbore dia sep	20.5		1
172		342	dist11; measured from the top of the bootjoint - small bore side- 20mm	lbore dia sep	21.2		1
173		0	dist12; measured from the top of the bootjoint - large bore side- 21mm				3
174		330	dist13; measured from the top of the bootjoint - large bore side- 22mm				3
175		0	DeBruijn1 vrfd, cm. stuck brass ferrule; dist14; measured from the top of the bootjoint				3
176		0	DeBruijn1 vrfd, cm. stuck brass ferrule; dist15; measured from the top of the l	lj_bot_bore	24.5		3
177		560	dist16; measured from the top of the long joint- 25mm				4
178		445	dist17; measured from the top of the long joint- 26mm				4
179		405	dist18; measured from the top of the long joint- 27mm				4
180		365	DeBruijn1 OOR; dist19; measured from the top of the long joint- 28mm				4
181		235	DeBruijn1 OOR; 270 x 200; dist20; measured from the top of the long joint- 29mm				4
182		130	dist21; measured from the top of the long joint- 30mm				4
183		0	dist22; measured from the top of the long joint- 31mm				4
184		0	dist23; measured from the top of the long joint- 32mm	lj_top_bore	30.4		4