	A	B	C	D	E	F	G	H
1	**I. Bocal**		Original bocal KüssW1 no bocal					
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; 323mm					
5	metal bocal length bot (0, 1)		meas. along bottom of bocal; 306mm					
6	dia wj end		inside diameter of bocal; 9.6mm					
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: KüssW1 yes looks to be lined with brass at bottom of bocal reciever					
14	choke bore dia.	8.8	logic 1; bore dia of choke; logic 0; either dia bocal bottom or beginning of bore at bottom or receiver					
15	receiver length (1, 0) (formally choke leng	25	logic 1; length of choke from top of wing joint; logic 0; length of receiver (same as string length)					
16	wing joint length	493	KüssW1 vrfd; total wing joint length, including tenon and socket					
17	tenon length	38.5	tenon length[longer wing 39.3mm]					
18								
19	wj f2	227	dist top of wing to where tone hole enters bore [not at the center of the tone hole]					
20	wj e	290						
21	wj d	328						
22								
23	Bore dia. Bottom of wing joint	15.9	Need to Average, usally oval; KüssW1 no					
24	Bore dia. top of boot joint small side	15.7						
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	97	dist from top of boot to where topmost tone hole enter bore [not at center of tone hole]					
30	bj b	164	KüssW1, vrfd finger holes far down small bore					
31	bj a	203						
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]	403	hook length along s bore => bjs-septum length = boot - septum <= calc the septum					
39	bootl [Needed for both boot logics]	403	hook length along l bore => bjl-septum length = boot - septum <= calc the septum					
40								
41	boots bottom [Needed for both boot logics	18.5	use hook, dist of bore [dist on stick plus 7mm, diff between hook and bot of stick] 11.5 + 7 = 18.5					
42	bootl bottom [Needed for both boot logics	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]	44.4	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	39	dist. From very bottom of boot to spetum [bjl - bootl]	do not imput value				
48	septum length - do not imput value	39	if bj logic = 0 => septum = septum exp; if bj logic = 1 => septum = sep	do not imput value				
49								
50	sbore dia sep* [Needed for both boot logic	0	KüssW1, Cannot measure, Ab insert extends into bore; 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	25	septum width; calc. => extreme bore - sbore - lbore	do not imput value				
54	sep width - do not imput value	25	if bj logic = 0 => sep width = sep width exp; if bj logic = 1 => sep width	do not imput value				
55								
56	bj g	333	dist from top of boot (socket) to where G hole enters bore [not at cent of tone hole]					
57	bj f1	133	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	5.9						
65	e	5.8						
66	d	5.5						
67								
68	c	8.1						
69	b	6.4						
70	a	5.4						
71	g	10						
72	f1	10						
73								
74	e1	12.7	e1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]					
75	d1	9.2	KüssW1, a white insert in low d tone hole; d1 tone hole dia, on long joint					
76	c1	13	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	31.4	KüssW1, f2 tone hole not drilled into center of bore					
84	e	31.5						
85	d	31.5						
86								
87	c	24.5						
88	b	24						
89	a	22						
90	g	14.5	meas along bot tone hole wall [north wall, toward reed,tone hole usually at angle]					
91	f1	21	meas along east side tone hole wall [north wall, toward reed,t hole usually at angle]					
92								
93	e1	7.6	e1 tone hole depth;meas east/west with deapth gauge [at center, or shortest dist]					

	A	B	C	D	E	F	G	H
94	d1	8.1	KüssW1, a white insert in low d tone hole; d1 tone hole depth; meas east/west with deapth gauge					
95	c1	7.7	c1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]					
96								
97								
98								
99								
100								
101	**VI. Long Joint**		There is a table along long joint:KüssW1 yes					
102	lg_length	578	KüssW1 vrfd; total length of long joint					
103	lg_tenon_bot	42.8	length bottom tenon on long joint [tenon going into boot joint]					
104	lj_bot_bore	23.8	long joint bottom tenon bore diameter [tenon going into boot joint]					
105	lj_top_bore	33.9	KüssW1 OOR 34.3 x 33.4long joint top tenon bore diameter [tenon going into bell]					
106	lg_tenon_top	36.6	length top tenon on long joint [tenon going into bell]					
107	e1 distance	51	dist long joint tenon to e1 [from bot of tenon to where tone hole enters bore]					
108	d1 distance	238	KüssW1, a white insert in low d tone hole; dist long joint tenon to d1 [tone hole enters bore					
109	c1 distance	502	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	12.2						
118	d	13.1						
119								
120	c	16.1						
121	b	16.8						
122	a	17.2						
123	g	20.4						
124	f1	22.8						
125								
126	e1	25.4	e1 tone hole bore diameter on long joint					
127	d1	28.8	d1 tone hole bore diameter on long joint					
128	c1	32.8	c1 tone hole bore diameter on long joint					
129								
130								
131								
132								
133								
134	**VIII. Bell**		KüssW1, There is not a tone hole in the bell					
135	bell logic	0	If bell_logic = 0 => normal conical; if bell_logic = 1 => inverted concial; if bell_logic = 2 => bell expansion					
136	bell_length (0, 1, 2)	335	total length of bell [lines 141 + 144 = line 136]					
137	bell_bot_bore (0, 1, 2)	33.9	dia bore at the bottom of bell [end with socket]					
138	bell_top_bore 0, (1, 0, 2)	36	KüssW1, 36 at very bell edge, 32.5mm at caliper jaws into bell; 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)	37	bell socket length					
144	bell_expansion_length (only for logic 2)		distance of maxium expansion to top of bell [where Bb exits]					
145	belflg	47	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**		Bassoon Calculation: KüssW1-O-Sigal1995.09-Wg1-WOB-DNM					
155	title							
156								
157			Notes on long joint bore: normal out of round in places					
158			Notes on boot joint bore: good shape					
159	**XI. Bore Diameter Locations**		Notes on wing joint bore: normal					
160		19	Number of diameters					
161	**Bell Bore**	8.8	Initial bore diameter [do not include in line 160 counting]					
162	33.9mm dia. at socket	0	KüssW1, could not meas. wing repair;dist1; - 10mm				1	
163	33mm rod 75mm from socket	308	dist2; measured from the bottom of the wing joint- 11mm				1	
164	32mm rod 130mm from socket	233	dist3; measured from the bottom of the wing joint- 12mm				1	
165	31mm rod 180mm from socket	177	dist4; measured from the bottom of the wing joint- 13mm				1	
166	30mm rod 252mm from socket	90	dist5; measured from the bottom of the wing joint- 14mm				1	
167	29.7mm rod 270mm from socket	0	dist6; measured from the bottom of the wing joint- 15mm	Bottom win	15.9		1	
168	32.5mm dia. at caliper jaws into bell;	95	dist7; measured from the top of the bootjoint - small bore side- 16mm	top boot sm	15.7		2	
169	36mm dia. at bell end	180	dist8; measured from the top of the bootjoint - small bore side- 17mm	top boot lar	25.3		2	
170		0	KüssW1, could not meas. Ab insert; dist9; - small bore side- 18mm				2	
171		0	KüssW1, could not meas. Ab insert; dist10; measured from the top of the	sbore dia se	0		2	
172		375	dist11; measured from the top of the bootjoint - large bore side- 20mm	lbore dia se	19.4		3	
173		310	dist12; measured from the top of the bootjoint - large bore side- 21mm	Hook Lengt	403		3	
174		210	dist13; measured from the top of the bootjoint - large bore side- 22mm				3	
175		122	dist14; measured from the top of the bootjoint - large bore side- 23mm				3	
176		565	dist15; measured from the top of the long joint - 24mm	lj_bot_bore	23.8		4	
177		534	dist16; measured from the top of the long joint- 25mm				4	
178		500	dist17; measured from the top of the long joint- 26mm				4	
179		455	dist18; measured from the top of the long joint- 27mm				4	
180		393	dist19; measured from the top of the long joint- 28mm				4	
181		328	dist20; measured from the top of the long joint- 29mm				4	
182		240	KüssW1, OOR; dist21; measured from the top of the long joint- 30mm				4	
183		170	dist22; measured from the top of the long joint- 31mm;				4	
184		130	KüssW1, OOR; dist23; measured from the top of the long joint- 32mm;	lj_top_bore	33.9		4	