	A	B	C	D	E	F	G	H	I
1	**I. Bocal**		Original bocal Kimpflin1 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						
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**		Kimpflin1 No bocal receiver						
14	choke bore dia.	10	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)	62	logic 1; length of choke from top of wing joint; logic 0; length of receiver (same as string length)						
16	wing joint length	500	Kimpflin1 vrfd short; total wing joint length, including tenon and socket						
17	tenon length	46.2	tenon length						
18									
19	wj f2	221	dist top of wing to where tone hole enters bore [not at the center of the tone hole]						
20	wj e	280							
21	wj d	327							
22									
23	Bore dia. Bottom of wing joint	16.5	Need to Average, usally oval; Kimpflin1 good shape here in general basn. Not very OOR						
24	Bore dia. top of boot joint small side	15.1	Kimpflin1 verified, Simiot1 and Kimpflin1boot socket smaller than wing tenon						
25	Bore dia. top of boot joint large side	24.1							
26									
27	**III. Boot Lengths**		Kimpflin1 Logic 1 but boot cork missing; normal cork, not two hole design						
28	bj logic	1	logic=> if bj logic = 0 => plug removed; if bj logic = 1 => plug cannot be removed						
29	bj c	99	dist from top of boot to where topmost tone hole enter bore [not at center of tone hole]						
30	bj b	158							
31	bj a	195							
32									
33	bjstotal [Needed for both boot logics]	426	Kimpflin1 vrfd short; total length of boot, include socket, along the small bore side						
34	bjltotal [Needed for both boot logics]	426	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]	381	hook length along s bore => bjs-septum length = boot - septum <= calc the septum						
39	bootl [Needed for both boot logics]	381	hook length along l bore => bjl-septum length = boot - septum <= calc the septum						
40									
41	boots bottom [Needed for both boot logics]	18.5	Kimpflin1 No cork but est. at 8.5 mm use hook, dist of bore [dist on stick plus 7mm, diff between hook and bot of stick]						
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]	43	Outside dia of plug [measured] = small bore dia + large bore dia + the septum width						
45									
46	septum length exp [Need for logic 0 only]	46	dist. from very bottom of boot to septum [point between the large and small bore];	did remove plug					
47	septum length calc - do not imput value	45	dist. From very bottom of boot to spetum [bjl - bootl]	do not imput value					
48	septum length - do not imput value	45	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]	18.8	Kimpflin1 OOR 18.5 x 19.1; septum small bore dia [assume = lbore dia sep]						
51	lbore dia sep* [Needed for both boot logics]	18.1	Kimpflin1 vrfd small side larger than large side; 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]	4.5	septum width; direct measurement if remove plug						
53	sep width calc - do not imput value	6.1	septum width; calc. => extreme bore - sbore - lbore	do not imput value					
54	sep width - do not imput value	6.1	if bj logic = 0 => sep width = sep width exp; if bj logic = 1 => sep width = sep w	do not imput value					
55									
56	bj g	350	vrfd long; dist from top of boot (socket) to where G hole enters bore [not at cent of tone hole]						
57	bj f1	135	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	5.5							
65	e	5.5	Kimpflin1 vrfd all finger holes similar						
66	d	5.4							
67									
68	c	8.2	Kimpflin1 vrfd large						
69	b	6.5							
70	a	5.3							
71	g	8.5							
72	f1	8.9							
73									
74	e1	12.4	e1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]						
75	d1	9.6	d1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]						
76	c1	13.2	Kimpflin1 oblong 12.8 x 13.8; c1 tone hole dia, on long joint [need to average NS and EW dias]						
77									
78									
79									
80									
81									
82	**V. Tone Hole Depths**								
83	f2	31	Kimpflin1 drilled at extreme angle						
84	e	27							
85	d	29	Kimpflin1 drilled at extreme angle						
86									
87	c	21							
88	b	22							
89	a	21	Kimpflin1 vrfd not at extreme angle						
90	g	14.5	meas along bot tone hole wall [north wall, toward reed,tone hole usually at angle]						
91	f1	19	Kimpflin1 vrfd not at extreme angle; vmeas along east side tone hole wall						
92									
93	e1	8	e1 tone hole depth;meas east/west with deapth gauge [at center, or shortest dist]						
94	d1	7	d1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]						
95	c1	8.7	c1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]						
96									
97									
98									
99									
100									
101	**VI. Long Joint**		Kimpflin1 a table along the long joint						
102	lg_length	591	Kimpflin1 vrfd long; total length of long joint						
103	lg_tenon_bot	47.8	length bottom tenon on long joint [tenon going into boot joint]						
104	lj_bot_bore	25	long joint bottom tenon bore diameter [tenon going into boot joint]						

	A	B	C	D	E	F	G	H	I
105	lj_top_bore	33.7	Kimpflin1 OOR 32.8 x 34.6; long joint top tenon bore diameter [tenon going into bell]						
106	lg_tenon_top	42.7	length top tenon on long joint [tenon going into bell]						
107	e1_distance	56	dist long joint tenon to e1 [from bot of tenon to where tone hole enters bore]						
108	d1 distance	261	dist long joint tenon to d1 [from bot of tenon to where tone hole enters bore];						
109	c1 distance	486	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	12.4							
117	e	12.9							
118	d	13.2							
119									
120	c	15.7							
121	b	15.9							
122	a	16.7							
123	g	18.6							
124	f1	22.3							
125									
126	e1	24.8	e1 tone hole bore diameter on long joint						
127	d1	27.7	d1 tone hole bore diameter on long joint						
128	c1	31.1	c1 tone hole bore diameter on long joint						
129									
130									
131									
132									
133									
134	**VIII. Bell**								
135	bell logic	1	If bell_logic = 0 => normal conical bore; if bell_logic = 1 => inverted concial bore						
136	bell_length (0, 1, 2)	330	Kimpflin1 vrfd long; total length of bell [lines 141 + 144 = line 136]						
137	bell_bot_bore (0, 1, 2)	32.2	Kimpflin1 OOR 31.9 x 32.4; dia bore at the bottom of bell [end with socket]						
138	bell_top_bore 0, (1, 0, 2)	31.7	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)	42.4	bell socket length						
144	bell_expansion_length (only for logic 2)		distance of maxium expansion to top of bell [where Bb exits]						
145	belflg	38	Usually about 10mm more than line 138						
146									
147									
148	**IX. PITCH**								
149	pitch	435	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: Kimpflin1-O-Reil-Wg1-WOB-DNM						
156									
157			Notes on long joint bore: Kimpflin1 not very out of round, just at septum						
158			Notes on boot joint bore: Kimpflin1 normal						
159	**XI. Bore Diameter Locations**		Notes on wing joint bore: Kimpflin1 normal						
160		22	Number of diameters						
161	**Bell Bore**	10	Initial bore diameter						
162	32.2mm diameter at socket	0	dist1; measured from the bottom of the wing joint- 10mm				1		
163	32mm rod 65mm from socket	358	dist2; measured from the bottom of the wing joint- 11mm				1		
164	31.7mm diameter at bell end	303	dist3; measured from the bottom of the wing joint- 12mm				1		
165		210	Kimpflin1 vrfd; dist4; measured from the bottom of the wing joint- 13mm				1		
166		93	dist5; measured from the bottom of the wing joint- 14mm				1		
167		65	dist6; measured from the bottom of the wing joint- 15mm	Bottom wing jt	16.5		1		
168		115	dist7; measured from the top of the bootjoint - small bore side- 16mm	top boot small	15.1		2		
169		225	dist8; measured from the top of the bootjoint - small bore side- 17mm	top boot large	24.1		2		
170		275	dist9; measured from the top of the bootjoint - small bore side- 18mm				2		
171		340	dist10; measured from the top of the bootjoint - largel bore side- 19mm	sbore dia sep	18.8		3		
172		318	dist11; measured from the top of the bootjoint - large bore side- 20mm	lbore dia sep	18.1		3		
173		235	dist12; measured from the top of the bootjoint - large bore side- 21mm	Hook Length	381		3		
174		160	dist13; measured from the top of the bootjoint - large bore side- 22mm				3		
175		120	dist14; measured from the top of the bootjoint - large bore side- 23mm				3		
176		70	dist15; measured from the top of the boot joint- large bore side- 24mm	lj_bot_bore	25		3		
177		505	dist16; measured from the top of the long joint- 25mm				4		
178		450	dist17; measured from the top of the long joint- 26mm				4		
179		380	dist18; measured from the top of the long joint- 27mm				4		
180		303	dist19; measured from the top of the long joint- 28mm				4		
181		250	dist20; measured from the top of the long joint- 29mm				4		
182		180	dist21; measured from the top of the long joint- 30mm				4		
183		112	dist22; measured from the top of the long joint- 31mm;				4		
184		25	dist23; measured from the top of the long joint- 32mm;	lj_top_bore	33.7		4		