	A	B	C	D	E	F	G	H	I	J	K	L
1	**I. Bocal**		Original bocal; GreenJ1 no bocal							Key1	Key2	Key3
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							2	2	2
9												
10												
11												
12												
13	**II. Wing Joint Lengths**		bocal receiver: GreenJ1 NO receiver, a choke									
14	choke bore dia.	10.4	logic 1; bore diameter of choke; logic 0; either diameter bocal bottom or beginning of bore at bottom or receiver							9.8	10.2	10.6
15	receiver length (1, 0) (formally choke leng	68	logic 1; length of choke from top of wing joint; logic 0; length of receiver (same as string length)							60	80	63
16	wing joint length	524	total wing joint length, including tenon and socket							521	521	517
17	tenon length	43.9	tenon length							50.4	49.5	46.3
18												
19	wj f2	226	dist top of wing to where tone hole enters bore [not at the center of the tone hole]							232	230	238
20	wj e	290								293	294	292
21	wj d	330								330	330	328
22												
23	Bore dia. Bottom of wing joint	15.3	GreenJ1 Need to Average, usally oval; yes slightly oval, vrfd bore at tenon small							16.2	16.4	16.9
24	Bore dia. top of boot joint small side	16.6								16.7	16.7	16.8
25	Bore dia. top of boot joint large side	23.9	GreenJ1 OOR 23.6 x 24.1							25.6	24.9	25.2
26												
27	**III. Boot Lengths**		GreenJ1 No Two whole design; normal rounded cork									
28	bj logic	1	logic=> if bj logic = 0 => plug removed; if bj logic = 1 => plug cannot be removed							1	1	1
29	bj c	96	dist from top of boot to where topmost tone hole enter bore [not at center of tone hole]							90	90	93
30	bj b	162								157	156	157
31	bj a	199								198	194	196
32												
33	bjstotal [Needed for both boot logics]	429	total length of boot, include socket, along the small bore side,							427	424	426
34	bjltotal [Needed for both boot logics]	429	total length of boot, include socket, along large bore side							427	424	426
35	plug small [Need for logic 0 only]	0	plug thickness, large bore side							0	0	0
36	plug large [Need for logic 0 only]	0	plug thickness, small bore side							0	0	0
37												
38	boots [Needed for both boot logics]	392	hook length along s bore => bjs-septum length = boot - septum <= calc the septum							392	392	390
39	bootl [Needed for both boot logics]	392	hook length along l bore => bjl-septum length = boot - septum <= calc the septum							392	392	390
40												
41	boots bottom [Needed for both boot logics	17	use hook, dist of bore [dist on stick plus 7mm, diff between hook and bot of stick] 10 + 7 =17							16	15	17
42	bootl bottom [Needed for both boot logics	17	use hook, dist of bore [same as boots bot except tenon depth will be different]							16	15	17
43												
44	extreme bore [Needed for logic 1 only]	43.2	Outside dia of plug [measured] = small bore dia + large bore dia + the septum width							46.2	42.8	47
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]							0	0	0
47	septum length calc - do not imput value	37	dist. From very bottom of boot to spetum [bjl - bootl]	do not imput value						35	32	36
48	septum length - do not imput value	37	if bj logic = 0 => septum = septum exp; if bj logic = 1 => septum = septum calc	do not imput value						35	32	36
49												
50	sbore dia sep* [Needed for both boot logic	19.6	septum small bore dia [assume = lbore dia sep]							19.7	19.7	19.7
51	lbore dia sep* [Needed for both boot logics	19.6	septum large bore dia [assume = sbore dia sep] [mesure if cork can be removed; for Logic 0]							20.3	20.2	20.1
52	sep width exp [Need for logic 0 only]	0	septum width; direct measurement if remove plug							0	0	0
53	sep width calc - do not imput value	4	septum width; calc. => extreme bore - sbore - lbore	do not imput value						6.2	2.9	7.2
54	sep width - do not imput value	4	if bj logic = 0 => sep width = sep width exp; if bj logic = 1 => sep width = sep width calc	do not imput value						6.2	2.9	7.2
55												
56	bj g	CM	GreenJ1 cannot remove key; dist from top of boot (socket) to where G hole enters bore [not at cent of tone hole]							361	361	362
57	bj f1	150	dist from top of boot (socket) to where F1 hole enters bore [not at cent of tone hole]							144	144	140
58												
59												
60												
61												
62												
63	**IV. Tone Hole Diameters**		GreenJ1, small finger holes on wing joint									
64	f2	4.6								4.4	4.8	4
65	e	5.5								5.3	5.4	4.4
66	d	5.2								5	5.1	5
67												
68	c	7.1								7	6.5	6.9
69	b	7.1								7	6.5	6.3
70	a	5.3								5.5	5.4	5.5
71	g	CM	GreenJ1 cannot remove key							7.3	7.3	8.3
72	f1	10.3								10.4	10.7	11.6
73												
74	e1	12	e1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]							9.5	10.5	9.8
75	d1	11.2	d1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]							9.1	9.1	9.2
76	c1	13.5	c1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]							13.2	13.1	13.2
77												
78												
79												
80												
81												
82	**V. Tone Hole Depths**											
83	f2	23.5								29	25.2	24.8
84	e	23.7								25.1	25.3	25
85	d	23.1								25.3	27	26.5
86												
87	c	20.7								20	21.5	20.5
88	b	24.2	GreenJ1 vrfd long							22.2	21	19.5
89	a	20.3								18.5	19.7	20.7
90	g	CM	GreenJ1 cannot remove key; meas along bot tone hole wall [north wall, toward reed,tone hole usually at angle]							18.3	16.5	18.2
91	f1	23.1	meas along east side tone hole wall [north wall, toward reed,t hole usually at angle]							19	21.5	22.8
92												
93	e1	9.3	e1 tone hole depth;meas east/west with deapth gauge [at center, or shortest dist]							9.1	11.2	9
94	d1	10	d1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]							10.2	8.6	9
95	c1	9.6	c1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]							8.9	8.4	8.5
96												
97												
98												
99												
100												
101	**VI. Long Joint**		GreenJ1 There is a table along long joint									
102	lg_length	575	total length of long joint							573	573	572
103	lg_tenon_bot	48.4	length bottom tenon on long joint [tenon going into boot joint]							49.7	50	50.3
104	lj_bot_bore	24	long joint bottom tenon bore diameter [tenon going into boot joint]							25.5	24.8	25.2
105	lj_top_bore	30.8	long joint top tenon bore diameter [tenon going into bell]							30.4	30.8	30.4
106	lg_tenon_top	36.1	length top tenon on long joint [tenon going into bell]							37.5	36.8	36.1
107	e1_distance	55	dist long joint tenon to e1 [from bot of tenon to where tone hole enters bore]							60	58	55
108	d1_distance	245	dist long joint tenon to d1 [from bot of tenon to where tone hole enters bore]							246	248	249

	A	B	C	D	E	F	G	H	I	J	K	L
109	c1 distance	446	dist long joint tenon to c1 [from bot of tenon to where tone hole enters bore]							448	446	446
110												
111												
112												
113												
114												
115	**VII. Bore diameters at Tone Holes**											
116	f2	12.1								12.2	12.2	12.4
117	e	13.1								13.1	13.2	13.2
118	d	13.6								13.7	13.8	13.9
119												
120	c	17								17.1	17.1	17.2
121	b	18								18.2	18.2	18.1
122	a	18.4								18.8	18.8	18.6
123	g	CM	GreenJ1 cannot remove key							20.5	20.5	20.5
124	f1	23.1								23.8	23.6	23.5
125												
126	e1	24	GreenJ1 vrfd small; e1 tone hole bore diameter on long joint							25.3	25.4	25.4
127	d1	26.7	d1 tone hole bore diameter on long joint							26.8	27.1	27.5
128	c1	29.6	c1 tone hole bore diameter on long joint							29.7	29.6	29.6
129												
130												
131												
132												
133												
134	**VIII. Bell**		GreenJ1 There is not a tone hole in the bell									
135	bell logic	0	If bell_logic = 0 => normal conical bore; if bell_logic = 1 => inverted concial bore; if bell_logic = 2 => bell expansion							0	0	0
136	bell_length (0, 1, 2)	311	total length of bell [lines 141 + 144 = line 136]							313	311	310
137	bell_bot_bore (0, 1, 2)	30.7	dia bore at the bottom of bell [end with socket]							30.8	30.3	30.2
138	bell_top_bore 0, (1, 0, 2)	44.5	dia bore at the top of bell [where low Bb exits]							41.5	38.8	46.7
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							39.4	38.5	37.2
144	bell_expansion_length (only for logic 2)		distance of maxium expansion to top of bell [where Bb exits]									
145	belflg	56.2	Usually about 10mm more than line 138							59	61	57.2
146												
147												
148	**IX. PITCH**											
149	pitch	430	input the historical pitch of the bassoon, must input value, best guess							430	430	430
150	freq_init	380	Initial frequency range variable							380	380	380
151	Delta frequency	2	frequency increment parameter							2	2	2
152	Number of frequencies	60	number of frequencies to scan for min chi sq							60	60	60
153	Frequency adjust	1.05	frequency adjustment parameter							1.05	1.05	1.05
154	**X. Title**											
155	title		Bassoon Calculation: GreenJ1-O-Veriam-Wg1-WB-DNM									
156												
157			Notes on long joint bore: GreenJ1 normal									
158			Notes on boot joint bore: GreenJ1 good shape									
159	**XI. Bore Diameter Locations**		Notes on wing joint bore: GreenJ1 good shape									
160		18	Number of diameters							18	17	16
161	**Bell Bore**	10.4	Initial bore diameter [do not include in line 160 counting]							9.8	10.2	10.6
162	30.7mm dia. at socket	0	dist1; measured from the bottom of the wing joint- 10mm				1			415	0	0
163	30.0mm rod 110mm from socket	370	dist2; measured from the bottom of the wing joint- 11mm				1			368	368	450
164	29.0mm rod 210mm from socket	300	dist3; measured from the bottom of the wing joint- 12mm				1			318	320	330
165	29.0mm rod 60mm from top of bell	240	dist4; measured from the bottom of the wing joint- 13mm				1			235	245	260
166	30.0mm rod 50mm from top of bell	160	dist5; measured from the bottom of the wing joint- 14mm				1			162	160	170
167	31.0mm rod 43mm from top of bell	110	dist6; measured from the bottom of the wing joint- 15mm	Bottom wing	15.3		1			105	120	120
168	32.0mm rod 40mm from top of bell	0	dist7; measured from the top of the bootjoint - small bore side- 16mm	top boot sma	16.6		1			0	0	0
169	44.5mm dia.at bell end [bell flares]	97	dist8; measured from the top of the bootjoint - small bore side- 17mm	top boot larg	23.9		2			0	110	70
170		170	dist9; measured from the top of the bootjoint - small bore side- 18mm				2			145	145	160
171		335	GreenJ1 vrfd; dist10; measured from the top of the bootjoint - large bore side- 19mm	sbore dia sep	19.6		2			213	218	240
172		370	dist11; measured from the top of the bootjoint - large bore side- 20mm	lbore dia sep	19.6		3			0	0	0
173		310	dist12; measured from the top of the bootjoint - large bore side- 21mm	Hook Length	392		3			345	355	350
174		250	dist13; measured from the top of the bootjoint - large bore side- 22mm				3			295	278	270
175		175	dist14; measured from the top of the bootjoint - large bore side- 23mm				3			195	190	195
176		521	dist15; measured from the top of the long joint- 24mm	lj_bot_bore	24		4			137	125	130
177		470	dist16; measured from the top of the long joint- 25mm				4			70	525	0
178		395	GreenJ1 vrfd (395); dist17; measured from the top of the long joint- 26mm				4			355	410	490
179		310	dist18; measured from the top of the long joint- 27mm				4			310	375	385
180		213	GreenJ1 vrfd; dist19; measured from the top of the long joint- 28mm				4			253	235	260
181		165	dist20; measured from the top of the long joint- 29mm				4			187	195	180
182		0	dist21; measured from the top of the long joint- 30mm				4			70	0	0
183		0	dist22; measured from the top of the long joint- 31mm				4			0	0	0
184		0	dist23; measured from the top of the long joint- 32mm	lj_top_bore	30.8		4			0	0	0
185										10	10	10
186										11	11	11
187										12	12	12
188										13	13	13
189										14	14	14
190										15	15	15
191										16	16	16
192										17	17	17
193										18	18	18
194										19	19	19
195										20	20	20
196										21	21	21
197										22	22	22
198										23	23	23
199										24	24	24
200										25	25	25
201										26	26	26
202										27	27	27
203										28	28	28
204										29	29	29
205										30	30	30
206										31	31	31
207										32	32	32