#	A	B	C	D	E	F	G	H	I	J
									Cuvillier1	Cuvillier2
1	I. Bocal		Original bocal; CouvillierP1 porbably not							
2	dia reed end		inside diameter of reed end of bocal						Brus	Brus
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
9										
10										
11										
12										
13	II. Wing Joint Lengths		bocal receiver: CouvillierP1 no reciever							
14	choke bore dia.	10.3	logic 1; bore diameter of choke; logic 0; either diameter bocal bottom or beginning of bore at bottom or receiver						8.5	10
15	receiver length (1, 0) (formally choke length)	60	logic 1; length of choke from top of wing joint; logic 0; length of receiver (same as string length)						33	33
16	wing joint length	506	total wing joint length, including tenon and socket						500	514
17	tenon length	46.1	tenon length						45.3	48.8
18										
19	wj f2	213	dist from top of wing to where tone hole enters bore [not at the center of the tone hole]						203	217
20	wj e	289							282	289
21	wj d	339							339	339
22										
23	Bore dia. Bottom of wing joint	14.8	CouvillierP1 vrfd small						14.9	12.5
24	Bore dia. top of boot joint small side	18.3							16.7	17.9
25	Bore dia. top of boot joint large side	23.3							21.4	21.4
26										
27	III. Boot Lengths									
28	bj logic	1	logic=> if bj logic = 0 => plug removed; if bj logic = 1 => plug cannot be removed						1	1
29	bj c	95	dist from top of boot to where topmost tone hole enter bore [not at center of tone hole]						95	94
30	bj b	157							153	153
31	bj a	202							199	198
32										
33	bjstotal [Needed for both boot logics]	432	CouvillierP1 two hole boot system; total length of boot, include socket, along the small bore side;						431	428
34	bjltotal [Needed for both boot logics]	432	total length of boot, include socket, along large bore side						431	428
35	plug small [Need for logic 0 only]	0	plug thickness, large bore side						0	0
36	plug large [Need for logic 0 only]	0	plug thickness, small bore side						0	0
37										
38	boots [Needed for both boot logics]	386	hook length along s bore => bjs-septum length = boot - septum <= calc the septum						388	386
39	bootl [Needed for both boot logics]	386	hook length along l bore => bjl-septum length = boot - septum <= calc the septum						388	386
40										
41	boots bottom [Needed for both boot logics]	20	use hook, dist of bore [dist on stick plus 7mm, diff between hook and bot of stick] 13.0 + 7 = 20						19	20
42	bootl bottom [Needed for both boot logics]	20	use hook, dist of bore [same as boots bot except tenon depth will be different]						19	20
43										
44	extreme bore [Needed for logic 1 only]	41.8	Outside dia of plug [measured] = small bore dia + large bore dia + the septum width						41.8	40.7
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
47	septum length calc - do not imput value	46	dist. From very bottom of boot to septum [bjl - bootl]	do not imput value					43	42
48	septum length - do not imput value	46	if bj logic = 0 => septum = septum exp; if bj logic = 1 => septum	do not imput value					43	42
49										
50	sbore dia sep* [Needed for both boot logics]	18.4	septum small bore dia [assume = lbore dia sep]						18.4	18.1
51	lbore dia sep* [Needed for both boot logics]	19.9	septum large bore dia [assume = sbore dia sep] [mesure if cork can be removed; for Logic 0]						19.4	19
52	sep width exp [Need for logic 0 only]	0	septum width; direct measurement if remove plug						0	0
53	sep width calc - do not imput value	3.5	septum width; calc. => extreme bore - sbore - lbore	do not imput value					4	3.6
54	sep width - do not imput value	3.5	if bj logic = 0 => sep width = sep width exp; if bj logic = 1 => sep	do not imput value					4	3.6
55										
56	bj g	335	dist from top of boot (socket) to where G hole enters bore [not at cent of tone hole]						337	336
57	bj f1	143	dist from top of boot (socket) to where F1 hole enters bore [not at cent of tone hole]						143	143
58										
59										
60										
61										
62										
63	IV. Tone Hole Diameters									
64	f2	5.5	CouvillierP1 vrfd						5.8	6.8
65	e	6.7							6.8	6.8
66	d	6							6.3	6.3
67										
68	c	7.8							7.8	7.8
69	b	7.2							6.7	7.2
70	a	6.5	CouvillierP1 vrfd						6.3	5.8
71	g	9.6							9.9	10
72	f1	9.3							9.7	8
73										
74	e1	12.5	e1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]						12.2	13.5
75	d1	9	d1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater];						9.2	11.2
76	c1	12.5	c1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]						12.3	13
77										
78										
79										
80										
81										
82	V. Tone Hole Depths									
83	f2	35.5	CouvillierP1 vrfd, F tone hole not drilled into center of bore						38.5	37.5
84	e	31.7	CouvillierP1 vrfd, F tone hole not drilled into center of bore						30.7	31.7
85	d	39	CouvillierP1 vrfd, D tone holes drilled at fairly extreme angle						38.8	36
86										
87	c	26							25	24
88	b	25.7							26.4	26.4
89	a	28.2	CouvillierP1, A tone holes drilled at fairly extreme angle						28.5	28.5
90	g	17.4	meas along bot tone hole wall [north wall, toward reed,tone hole usually at angle]						15.5	15.5
91	f1	23	meas along east side tone hole wall [north wall, toward reed,t hole usually at angle]						19	21
92										
93	e1	8.2	e1 tone hole depth;meas east/west with deapth gauge [at center, or shortest dist]						8.5	6.5
94	d1	6.7	d1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]						8.1	6.5
95	c1	7.2	c1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]						7.3	5.5
96										
97										
98										
99										
100										
101	VI. Long Joint		CouvillierP1 There is a table along long joint							
102	lg_length	589	total length of long joint						585	583
103	lg_tenon_bot	45.5	length bottom tenon on long joint [tenon going into boot joint]						45.8	46
104	lj_bot_bore	24.1	long joint bottom tenon bore diameter [tenon going into boot joint]						23.8	23.2

#	A	B	C	D	E	F	G	H	I	J
105	lj_top_bore	32.8	CouvillierP1 OOR, 33.2 x 32.3; long joint top tenon bore diameter [tenon going into bell]						31.5	31.3
106	lg_tenon_top	36.1	length top tenon on long joint [tenon going into bell]						35	32.5
107	e1 distance	52	dist long joint tenon to e1 [from bot of tenon to where tone hole enters bore]						54	52
108	d1 distance	254	dist long joint tenon to d1 [from bot of tenon to where tone hole enters bore];						255	254
109	c1 distance	471	CouvillierP1 vrds; dist long joint tenon to c1						469	482
110										
111										
112										
113										
114										
115	**VII. Bore diameters at Tone Holes**									
116	f2	12							11.3	0
117	e	13.1							12.6	0
118	d	13.4	CouvillierP1, might be 13.5, wing has narrow tenon						13.3	0
119										
120	c	17.2							16.5	16.5
121	b	17.3							16.6	16.6
122	a	17.3							16.7	16.8
123	g	21							20.6	20.2
124	f1	22							21.2	21.2
125										
126	e1	24.8	e1 tone hole bore diameter on long joint						24.7	23.9
127	d1	27.9	d1 tone hole bore diameter on long joint						28.1	26.6
128	c1	31.2	c1 tone hole bore diameter on long joint						31.1	30.8
129										
130										
131										
132										
133										
134	**VIII. Bell**		CouvillierP1, no bell tone hole							
135	bell logic	1	If bell_logic = 0 => normal conical bore; if bell_logic = 1 => inverted concial bore; if bell_logic = 2 => bell expansi						1	0
136	bell_length (0, 1, 2)	326	total length of bell [lines 141 + 144 = line 136]						325	328
137	bell_bot_bore (0, 1, 2)	33.1	CouvillierP1, OOR 33.3 x 32.9 verified, dia bore at the bottom of bell [end with socket]						30.9	29.2
138	bell_top_bore 0, (1, 2)	31.2	dia bore at the top of bell [where low Bb exits]						30.6	34
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)	36.1	bell socket length						35.2	34.5
144	bell_expansion_length (only for logic 2)		distance of maxium expansion to top of bell [where Bb exits]							
145	Bellflg	40							39.5	39.5
146										
147										
148	**IX. PITCH**									
149	pitch	430	input the historical pitch of the bassoon, must input value, best guess						430	430
150	freq_init	380	Initial frequency range variable						380	380
151	Delta frequency	2	frequency increment parameter						2	2
152	Number of frequencies	60	number of frequencies to scan for min chi sq						60	60
153	Frequency adjust	1.05	frequency adjustment parameter						1.05	1.05
154	**X. Title**									
155	title		Bassoon Calculation:CuvillierP1-O-Sigal1995.08-Wg1-WOB-DNM							
156										
157			Notes on long joint bore: CuvillierP1 more OOR than normal							
158			Notes on boot joint bore: CuvillierP1 boot in good shape, but very differ. Tapers							
159	**XI. Bore Diameter Locations**		Notes on wing joint bore: CuvillierP1, choke at wing tenon							
160	All zeros in bore diameters verified	13	Number of diameters						17	13
161	**Bell Bore**	10.3	Initial bore diameter						8.5	10
162	33.1mm dia. at socket	0	dist1; measured from the bottom of the wing joint- 10mm				1		383	0
163	32mm rod 70mm from socket	385	dist2; measured from the bottom of the wing joint- 11mm				1		326	0
164	31mm rod 140mm from socket	300	dist3; measured from the bottom of the wing joint- 12mm				1		252	0
165	31.2mm dia. at bell end	230	dist4; measured from the bottom of the wing joint- 13mm				1		187	0
166		0	CouvillierP1, large differ. Between wing and boot; dist5; measured from the bottom of the wing				1		52	0
167		0	dist6; measured from the bottom of the wing joint- 15mm	Bottom wing jt	14.8		1		0	0
168		0	dist7; measured from the top of the bootjoint - small bore side- 16	top boot small	18.3		2		0	0
169		0	dist8; measured from the top of the bootjoint - small bore side- 17	top boot large	23.3		2		265	300
170		320	CouvillierP1 vrfd; large differ. Between wing and boot; dist9; measured from the top of the boo				2		337	360
171		0	dist10; measured from the top of the bootjoint - small bore side- 1	sbore dia sep	18.4		2		0	0
172		370	dist11; measured from the top of the bootjoint - large bore side- 20	lbore dia sep	19.9		3		380	356
173		353	dist12; measured from the top of the bootjoint - large bore side- 21	Hook Length	386		3		322	290
174		0	dist13; measured from the top of the bootjoint - large bore side- 22mm, vrfd				3		0	0
175		0	dist14; measured from the top of the bootjoint - large bore side- 23mm				4		0	553
176		0	dist15; measured from the top of the long joint - 24mm	lj_bot_bore	24.1		4		537	502
177		500	dist16; measured from the top of the long joint- 25mm				4		490	465
178		435	dist17; measured from the top of the long joint- 26mm				4		430	395
179		370	dist18; measured from the top of the long joint- 27mm				4		465	305
180		317	dist19; measured from the top of the long joint- 28mm				4		307	245
181		250	dist20; measured from the top of the long joint- 29mm				4		230	205
182		187	CuvillierP1 very OOR; dist21; measured from the top of the long joint- 30mm;				4		167	130
183		115	CuvillierP1 very OOR; dist22; measured from the top of the long joint- 31mm;				4		105	75
184		0	dist23; measured from the top of the long joint- 32mm;	lj_top_bore	32.8		4		0	0