	A	B	C	D	E	F	G
1	**I. Bocal**		Original bocal; Pezé5 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**		bocal receiver: Pezé5 no				
14	choke bore dia.	10.4	logic 1; bore diameter of choke; logic 0; either dia bocal bottom or beginning of bore at bottom or receiver				
15	receiver length (1, 0) (formally choke length)	50	logic 1; length of choke from top of wing joint; logic 0; length of receiver (same as string length)				
16	wing joint length	532	total wing joint length, including tenon and socket				
17	tenon length	47.5	tenon length; Pezé5 wing tenon has been replaced, brass insert in bore				
18							
19	wj f2	239	Pezé5 vrfd, different; dist top of wing to where tone hole enters bore [not at the center of the tone hole]				
20	wj e	295					
21	wj d	333					
22							
23	Bore dia. Bottom of wing joint	14.3	Pezé5 tenon replaced, brass tube insert at tenon is 13.4mm vrfd, used 14.3 as approx. measurement				
24	Bore dia. top of boot joint small side	14.3	Pezé5 OOR 14.5 x 14.1				
25	Bore dia. top of boot joint large side	24.1					
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	88	dist from top of boot to where topmost tone hole enter bore [not at center of tone hole]				
30	bj b	149					
31	bj a	188					
32							
33	bjstotal [Needed for both boot logics]	439	total length of boot, include socket, along the small bore side				
34	bjltotal [Needed for both boot logics]	439	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]	395	hook length along s bore => bjs-septum length = boot - septum <= calc the septum				
39	bootl [Needed for both boot logics]	395	hook length along l bore => bjl-septum length = boot - septum <= calc the septum				
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			
42	bootl bottom [Needed for both boot logics]	17	use hook, dist of bore [same as boots bot except tenon depth will be different]				
43							
44	extreme bore [Needed for logic 1 only]	40.9	Pezé5; could not remove boot cap, used meas. from Pezé3 Kampmann;				
45			Outside dia of plug=small bore [measured] dia+large bore dia + the septum				
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	44	dist. From very bottom of boot to spetum [bjl - bootl]	do not imput value			
48	septum length - do not imput value	44	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]	19.1	septum small bore dia [assume = lbore dia sep]				
51	lbore dia sep* [Needed for both boot logics]	19.2	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	2.6	septum width; calc. => extreme bore - sbore - lbore	do not imput value			
54	sep width - do not imput value	2.6	if bj logic = 0 => sep width = sep width exp; if bj logic = 1 => sep width = sep v	do not imput value			
55							
56	bj g	326	dist from top of boot (socket) to where G hole enters bore [not at cent of tone hole]				
57	bj f1	132	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	5.1					
65	e	6					
66	d	5.4					
67							
68	c	7.2					
69	b	7.5					
70	a	6					
71	g	9.2					
72	f1	9.4					
73							
74	e1	14.6	e1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]				
75	d1	9	d1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]				
76	c1	15	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	27.5					
84	e	27.5					
85	d	26.8					
86							
87	c	27					
88	b	26					
89	a	27					
90	g	16	meas along bot tone hole wall [north wall, toward reed,tone hole usually at angle]				
91	f1	20.5	meas along east side tone hole wall [north wall, toward reed,t hole usually at angle]				
92							
93	e1	8.2	e1 tone hole depth;meas east/west with deapth gauge [at center, or shortest dist]				

	A	B	C	D	E	F	G
94	d1	7.5	d1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]				
95	c1	7.3	c1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]				
96							
97							
98							
99							
100							
101	**VI. Long Joint**		Pezé5 There is a table along long joint				
102	lg_length	585	total length of long joint				
103	lg_tenon_bot	48.5	length bottom tenon on long joint [tenon going into boot joint]				
104	lj_bot_bore	24	Pezé5, OOR 24.4 x 23.6; long joint bottom tenon bore diameter [tenon going into boot joint]				
105	lj_top_bore	32.5	long joint top tenon bore diameter [tenon going into bell]				
106	lg_tenon_top	37.6	length top tenon on long joint [tenon going into bell] verified				
107	e1 distance	54	dist long joint tenon to e1 [from bot of tenon to where tone hole enters bore]				
108	d1 distance	256	dist long joint tenon to d1 [from bot of tenon to where tone hole enters bore]				
109	c1 distance	472	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					
117	e	12.5					
118	d	13.1					
119							
120	c	15.1					
121	b	16.5					
122	a	16.6					
123	g	20.3					
124	f1	21.8					
125							
126	e1	25.3	e1 tone hole bore diameter on long joint				
127	d1	28.4	d1 tone hole bore diameter on long joint				
128	c1	31.2	c1 tone hole bore diameter on long joint				
129							
130							
131							
132							
133							
134	**VIII. Bell**		Pezé5 There is not a tone hole in the bell				
135	bell logic	1	If bell_logic = 0 =>normal conical; if bell_logic=1=>inverted concial;if bell_logic=2=>bell expansion				
136	bell_length (0, 1, 2)	313	Pezé5 vrfd; total length of bell [lines 141 + 144 = line 136]				
137	bell_bot_bore (0, 1, 2)	34.4	dia bore at the bottom of bell [end with socket]				
138	bell_top_bore 0, (1, 0, 2)	31.8	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)	36.2	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	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**						
155	title		Bassoon Calculation: Pezé5-O-Sigal2001.06-Wg1-WOB-DNM				
156							
157			Notes on long joint; Pezé5 Normal				
158			Notes on boot joint bore: Pezé5 Nortal				
159	**XI. Bore Diameter Locations**		Notes on wing joint bore: Pezé5 Normal except for brass tube insert				
160		20	Number of diameters				
161	**Bell Bore**	10.4	Initial bore diameter [do not include in line 160 counting]				
162	34.4mm dia. at socket	0	dist1; measured from the bottom of the wing joint- 10mm				1
163	34mm rod 139mm from socket	340	dist2; measured from the bottom of the wing joint- 11mm				1
164	33mm rod 245mm from socket	295	dist3; measured from the bottom of the wing joint- 12mm				1
165	32mm rod 300mm from socket	210	dist4; measured from the bottom of the wing joint- 13mm				1
166	31.8mm dia. at bell end	0	dist5; measured from the bottom of the wing joint- 14mm;				1
167		80	dist6; measured from the top of the bootjoint - small bore side- 15mm	Bottom wing jt	14.3		2
168		108	dist7; measured from the top of the bootjoint - small bore side- 16mm	top boot small	14.3		2
169		225	dist8; measured from the top of the bootjoint - small bore side- 17mm	top boot large	24.1		2
170		280	dist9; measured from the top of the bootjoint - small bore side- 18mm				2
171		370	dist10; measured from the top of the bootjoint - large bore side- 19mm	sbore dia sep	19.1		2
172		370	dist11; measured from the top of the bootjoint - large bore side- 20mm	lbore dia sep	19.2		3
173		260	dist12; measured from the top of the bootjoint - large bore side- 21mm	Hook Length	395		3
174		110	Pezé5 OOR; dist13; measured from the top of the bootjoint - large bore side- 22mm				3
175		70	dist14; measured from the top of the bootjoint - large bore side- 23mm				3
176		0	dist15; measured from the top of the long joint- 24mm	lj_bot_bore	24		4
177		540	dist16; measured from the top of the long joint- 25mm				4
178		505	dist17; measured from the top of the long joint- 26mm				4
179		400	Pezé5 vrfd; dist18; measured from the top of the long joint- 27mm				4
180		355	dist19; measured from the top of the long joint- 28mm				4
181		300	dist20; measured from the top of the long joint- 29mm				4
182		225	dist21; measured from the top of the long joint- 30mm				4
183		115	dist22; measured from the top of the long joint- 31mm				4
184		50	dist23; measured from the top of the long joint- 32mm	lj_top_bore	32.5		4