

	A	B	C	D	E	F	G
1	I. Bocal		Original bocal; Porthaux1 no				
2	dia reed end	4.2	inside diameter of reed end of bocal				
3	bocal string length (0, 1)	30	length of bocal inserted into receiver				
4	metal bocal length top (0, 1)	335	meas. along top of bocal				
5	metal bocal length bot (0, 1)	314	meas. along bottom of bocal				
6	dia wj end	9.2	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; Porthaux1 there is a choke				
14	choke bore dia.	9.2	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)	49	logic 1; length of choke from top of wing joint; logic 0; length of receiver (same as string length)				
16	wing joint length	516	total wing joint length, including tenon and socket				
17	tenon length	51.4	tenon length				
18							
19	wj f2	213	dist top of wing to where tone hole enters bore [not at the center of the tone hole]				
20	wj e	282					
21	wj d	327					
22							
23	Bore dia. Bottom of wing joint	15.1	Need to Average, usually oval; Porthaux1 no				
24	Bore dia. top of boot joint small side	15.8	Need to Average, usually oval; Porthaux1 no				
25	Bore dia. top of boot joint large side	23.4					
26							
27	III. Boot Lengths						
28	bj logic	1	logic=> if bj logic = 0 => plug removed; if bj logic = 1 => plug cannot be removed				
29	bj c	90	dist from top of boot to where topmost tone hole enter bore [not at center of tone hole]				
30	bj b	150					
31	bj a	189					
32			Porthaux1 meas. With boot cap removed				
33	bjtotal [Needed for both boot logics]	432	total length of boot, include socket, along the small bore side				
34	bjltotal [Needed for both boot logics]	432	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]	392	hook length along s bore => bjs-septum length = boot - septum <= calc the septum				
39	bootl [Needed for both boot logics]	392	hook length along l bore => bjl-septum length = boot - septum <= calc the septum				
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+7=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]				
43							
44	extreme bore [Needed for logic 1 only]	48.3	Outside dia of plug [measured] = small bore dia + large bore dia + the septum width				
45							
46	septum length exp [Need for logic 0 only]	44	dist. from very bottom of boot to septum [point between the large and small bore]				
47	septum length calc - do not imput value	40	dist. From very bottom of boot to septum [bjl - bootl]		do not imput value		
48	septum length - do not imput value	40	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]	19.3	septum large bore dia [assume = sbore dia sep] [measure 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	9.8	septum width; calc. => extreme bore - sbore - lbore		do not imput value		
54	sep width - do not imput value	9.8	if bj logic = 0 => sep width = sep width exp; if bj logic = 1 => sep width = sep width calc		do not imput value		
55							
56	bj g	323	dist from top of boot (socket) to where G hole enters bore [not at cent of tone hole]				
57	bj f1	136	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					
65	e	5.5					
66	d	5.7					
67							
68	c	8.5					
69	b	7.3					
70	a	5.9					
71	g	10.3					
72	f1	8.6					
73							
74	e1	10.2	e1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]				
75	d1	8.5	d1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]				
76	c1	13.2	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	33.2					
84	e	29					
85	d	29					
86							
87	c	29					
88	b	30					
89	a	30					
90	g	18	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	7.5	e1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]				
94	d1	8	d1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]				
95	c1	8.8	c1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]				
96							
97							
98							
99							
100							
101	VI. Long Joint		Porthaux1 There is a table along long joint				
102	lg_length	589	total length of long joint;				
103	lg_tenon_bot	50.5	length bottom tenon on long joint [tenon going into boot joint]				
104	lj_bot_bore	25.3	long joint bottom tenon bore diameter [tenon going into boot joint]				

	A	B	C	D	E	F	G
105	lj_top_bore	32.5	long joint top tenon bore diameter [tenon going into bell]				
106	lg_tenon_top	41	length top tenon on long joint [tenon going into bell]				
107	e1_distance	63	dist long joint tenon to e1 [from bot of tenon to where tone hole enters bore]				
108	d1_distance	263	dist long joint tenon to d1 [from bot of tenon to where tone hole enters bore]				
109	c1_distance	481	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	12.1					
117	e	13.7					
118	d	13.9					
119							
120	c	15.8					
121	b	17.3					
122	a	17.9					
123	g	19.7					
124	f1	22.5					
125							
126	e1	25.3	e1 tone hole bore diameter on long joint				
127	d1	28.1	d1 tone hole bore diameter on long joint				
128	c1	31.7	c1 tone hole bore diameter on long joint				
129							
130							
131							
132							
133							
134	VIII. Bell		Porthaux1; There is not a tone hole in the bell:				
135	bell_logic	1	If bell_logic = 0 => normal conical bore; if bell_logic = 1 => inverted conical bore; if bell_logic = 2 => bell expansion				
136	bell_length (0, 1, 2)	333	total length of bell				
137	bell_bot_bore (0, 1, 2)	34.8	dia bore at the bottom of bell [end with socket];				
138	bell_top_bore 0, (1, 0, 2)	31.3	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)	42.8	bell socket length				
144	bell_expansion_length (only for logic 2)		distance of maxium expansion to top of bell [where Bb exits]				
145	bellfg	36	Usually about 10mm more than line 138;				
146							
147							
148	IX. PITCH						
149	pitch	415	input the historical pitch of the bassoon, must input value, best guess				
150	freq_init	360	Initial frequency range variable				
151	Delta frequency	2	frequency increment parameter				
152	Number of frequencies	80	number of frequencies to scan for min chi sq				
153	Frequency adjust	1.087	frequency adjustment parameter				
154	X. Title						
155	title		Bassoon Calculation: Porthaux1-O-Sigal-Wg1-WB-DNM				
156							
157			Notes on long joint bore: Porthaux1 some OOR				
158			Notes on boot joint bore: Porthaux1 normal				
159	XI. Bore Diameter Locations		Notes on wing joint bore: Porthaux1, normal, top near bocal receiver worn??				
160		22	Number of diameters				
161		9.2	Initial bore diameter [do not include in line 160 counting]				
162		415	dist1; measured from the bottom of the wing joint- 10mm				1
163		346	dist2; measured from the bottom of the wing joint- 11mm				1
164		302	dist3; measured from the bottom of the wing joint- 12mm				1
165		275	dist4; measured from the bottom of the wing joint- 13mm				1
166		175	dist5; measured from the bottom of the wing joint- 14mm				1
167		9	dist6; measured from the bottom of the wing joint- 15mm	Bottom wing jt	15.1		1
168		100	dist7; measured from the top of the bootjoint - small bore side- 16mm	top boot small	15.8		2
169		144	dist8; measured from the top of the bootjoint - small bore side- 17mm	top boot large	23.4		2
170		192	Porthaux1 OOR 185 x 200 ; dist9; measured from the top of the bootjoint - small bore side- 18mm				2
171		385	dist10; measured from the top of the bootjoint - large bore side- 19mm	sbore dia sep	19.1		2
172		309	dist11; measured from the top of the bootjoint - large bore side- 20mm	lbore dia sep	19.3		3
173		235	dist12; measured from the top of the bootjoint - large bore side- 21mm	Hook Length	392		3
174		180	Porthaux1 OOR 165 x 195 ; dist13; measured from the top of the bootjoint - large bore side- 22mm;				3
175		70	Porthaux1 OOR 55 x 85 verified ; 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	25.3		4
177		550	dist16; measured from the top of the long joint- 25mm				4
178		443	Porthaux1 OOR 435 x 450 ; dist17; measured from the top of the long joint- 26mm;				4
179		401	dist18; measured from the top of the long joint- 27mm				4
180		317	Porthaux1 very OOR 285 x 250 ; dist19; measured from the top of the long joint- 28mm				4
181		235	dist20; measured from the top of the long joint- 29mm				4
182		164	dist21; measured from the top of the long joint- 30mm				4
183		130	dist22; measured from the top of the long joint- 31mm				4
184		9	dist23; measured from the top of the long joint- 32mm	lj_top_bore	32.5		4