

	A	B	C	D	E	F	G
1	<b>I. Bocal</b>		Original bocal; AdlerFG3 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	<b>II. Wing Joint Lengths</b>		bocal receiver: AdlerFG3 No				
14	choke bore dia.	9.9	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	504	total wing joint length, including tenon and socket; AdlerFG3 as with wing and boot height, 1mm subtracted see photo				
17	tenon length	49.3	tenon length				
18							
19	wj f2	201	AdlerFG3 f2 tone hole plugged and re-drilled; dist top of wing to where tone hole enters bore [not at the center of the tone hole]				
20	wj e	288	AdlerFG3 with wing finger holes as with wing and boot height, 1mm subtracted see photo				
21	wj d	333	AdlerFG3 vrfd; f and d tone holes at fairly steep angle				
22							
23	Bore dia. Bottom of wing joint	14.5	AdlerFG3 verified small; need to Average, usually oval; not AdlerFG3				
24	Bore dia. top of boot joint small side	15.4	AdlerFG3 verified small				
25	Bore dia. top of boot joint large side	24.7	AdlerFG3 verified small				
26							
27	<b>III. Boot Lengths</b>						
28	bj logic	1	logic=> if bj logic = 0 => plug removed; if bj logic = 1 => plug cannot be removed				
29	bj c	85	dist from top of boot to where topmost tone hole enter bore [not at center of tone hole]				
30	bj b	151					
31	bj a	195					
32			AdlerFG3 meas. With boot cap removed				
33	bistotal [Needed for both boot logics]	432	total length of boot, include socket, along the small bore side,				
34	bjtotal [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]	382	hook length along s bore => bjs-septum length = boot - septum <= calc the septum				
39	bootl [Needed for both boot logics]	382	hook length along l bore => bj1-septum length = boot - septum <= calc the septum				
40							
41	boots bottom [Needed for both boot logics]	29	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]	29	use hook, dist of bore [same as boots bot except tenon depth will be different] 22 + 7=29				
43							
44	extreme bore [Needed for logic 1 only]	44.8	AdlerFG3 vrfd large; Outside dia of plug [measured] = small bore dia + large bore dia + the septum width				
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]				
47	septum length calc - do not imput value	50	dist. From very bottom of boot to septum [bj1 - bootl]			do not imput value	
48	septum length - do not imput value	50	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]	18.5	septum small bore dia [assume = lbore dia sep]				
51	lbore dia sep* [Needed for both boot logics]	19.1	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	7.2	septum width; calc. => extreme bore - sbore - lbore			do not imput value	
54	sep width - do not imput value	7.2	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	337	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	<b>IV. Tone Hole Diameters</b>						
64	f2	4	AdlerFG3 vrfd, re-drilled very small				
65	e	5.8					
66	d	5.6					
67							
68	c	7.4					
69	b	6.6					
70	a	5.9					
71	g	8.7					
72	f1	8.6	AdlerFG3 vrfd, small				
73							
74	e1	13	e1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]				
75	d1	9.8	AdlerFG3 there is a flap can be larger; d1 tone hole dia, on long joint [need to average NS and EW dias]				
76	c1	13.9	15; c1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]				
77							
78							
79							
80							
81							
82	<b>V. Tone Hole Depths</b>						
83	f2	42.5	AdlerFG3 f and d tone holes drilled at extreme angle, and very long epaule, and re-drilled				
84	e	35	AdlerFG3 long epaule				
85	d	40	AdlerFG3 long epaule				
86							
87	c	29					
88	b	28.5					
89	a	31					
90	g	17	meas along bot tone hole wall [north wall, toward reed,tone hole usually at angle]				
91	f1	22	meas along east side tone hole wall [north wall, toward reed,t hole usually at angle]				
92							
93	e1	7.3	e1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]				
94	d1	8.2	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	<b>VI. Long Joint</b>		AdlerFG3 a table along long joint				
102	lg_length	588	total length of long joint				
103	lg_tenon_bot	50.5	length bottom tenon on long joint [tenon going into boot joint]				
104	li_bot_bore	24.9	AdlerFG3 OOR 24.3 x 25.5; long joint bottom tenon bore diameter [tenon going into boot joint]				

	A	B	C	D	E	F	G
105	lj_top_bore	33.3	AdlerFG3 slightly OOR; long joint top tenon bore diameter [tenon going into bell]				
106	lg_tenon_top	40.5	length top tenon on long joint [tenon going into bell]				
107	e1_distance	62	dist long joint tenon to e1 [from bot of tenon to where tone hole enters bore]				
108	d1_distance	260	AdlerFG3 flap over tone hole; dist long joint tenon to d1 [from bot of tenon to where tone hole enters bore]				
109	c1_distance	479	AdlerFG3 verified long; dist long joint tenon to c1 [from bot of tenon to where tone hole enters bore]				
110							
111							
112							
113							
114							
115	<b>VII. Bore diameters at Tone Holes</b>						
116	f2	11.6					
117	e	12.8					
118	d	13.1					
119							
120	c	15.1					
121	b	16.2					
122	a	17.1					
123	g	19.2					
124	f1	23.2					
125							
126	e1	25.1	e1 tone hole bore diameter on long joint				
127	d1	27.8	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	<b>VIII. Bell</b>						
135	bell_logic	1	AdlerFG3 no tone hole in the bell, 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)	331	total length of bell [lines 141 + 144 = line 136]				
137	bell_bot_bore (0, 1, 2)	34.1	AdlerFG3 verified; dia bore at the bottom of bell [end with socket]				
138	bell_top_bore 0, (1, 0, 2)	33.5	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)	40.5	bell socket length				
144	bell_expansion_length (only for logic 2)		distance of maxium expansion to top of bell [where Bb exits]				
145	bellfg	37	AdlerFG3 Bell top totally different from AdlerFG1				
146							
147							
148	<b>IX. PITCH</b>						
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	<b>X. Title</b>						
155	title		Bassoon Calculation: AdlerFG3-O-Riel-Wg1-WOB-DNM				
156							
157			Notes on long joint bore: AdlerFG3 good				
158			Notes on boot joint bore: AdlerFG3 normal				
159	<b>XI. Bore Diameter Locations</b>						
160		21	Number of diameters				
161	<b>Bell Bore</b>	9.9	Initial bore diameter [do not include in line 160 counting]				
162	34.1mm diameter at socket	422	dist1; measured from the bottom of the wing joint- 10mm				1
163	34mm rod 55mm from socket	330	dist2; measured from the bottom of the wing joint- 11mm				1
164	33.5mm diameter at bell end	268	dist3; measured from the bottom of the wing joint- 12mm				1
165		170	dist4; measured from the bottom of the wing joint- 13mm				1
166		0	dist5; measured from the bottom of the wing joint- 14mm				1
167		70	dist6; measured from the bottom of the wing joint- 15mm	Bottom wing jt	14.5		2
168		135	dist7; measured from the top of the bootjoint - small bore side- 16mm	top boot small	15.4		2
169		183	dist8; measured from the top of the bootjoint - small bore side- 17mm	top boot large	24.7		2
170		273	AdlerFG3 vrfd gap; dist9; measured from the top of the bootjoint - small bore side- 18mm				2
171		0	dist10; measured from the top of the bootjoint - large bore side- 19mm	sbore dia sep	18.5		3
172		300	dist11; measured from the top of the bootjoint - large bore side- 20mm	lbore dia sep	19.1		3
173		245	dist12; measured from the top of the bootjoint - large bore side- 21mm	Hook Length	382		3
174		205	dist13; measured from the top of the bootjoint - large bore side- 22mm				3
175		160	dist14; measured from the top of the bootjoint - large bore side- 23mm				3
176		80	dist15; measured from the top of the long joint- 24mm	lj_bot_bore	24.9		3
177		545	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		415	dist18; measured from the top of the long joint- 27mm				4
180		305	dist19; measured from the top of the long joint- 28mm				4
181		245	dist20; measured from the top of the long joint- 29mm				4
182		170	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		65	dist23; measured from the top of the long joint- 32mm	lj_top_bore	33.3		4