	A	B	C	D	E	F	G	H	I	J
1	**I. Bocal**		Original bocal; Finke1 no bocal						GrenserH8	GrenserH&Wiesner1
2	dia reed end		inside diameter of reed end of bocal; 4.6							
3	bocal string length (0, 1)		length of bocal inserted into receiver; 18							
4	metal bocal length top (0, 1)		meas. along top of bocal; 333							
5	metal bocal length bot (0, 1)		meas. along bottom of bocal; 314							
6	dia wj end		inside diameter of bocal; 9.8							
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**		Finke1 bocal receiver: a slight ledge at c40mm down into bocal receiver, choke c80mm down							
14	choke bore dia.	7.6	Finke1 vrfd small; logic 1; bore diameter of choke; logic 0; either diameter bocal bottom or beginning of bore at bottom or receiv						8.7	8.3
15	receiver length (1, 0) (formally choke length)	80	logic 1; length of choke from top of wing joint; logic 0; length of receiver (same as string length)						45	24.8
16	wing joint length	529	total wing joint length, including tenon and socket						509	524
17	tenon length	38.5	tenon length[longer wing 39.3mm]						40	41.8
18										
19	wj f2	252	dist top of wing to where tone hole enters bore [not at the center of the tone hole]						232	228
20	wj e	310	Finke1 Tone hole not exactly drilled into center of bore and not in a straight line						292	299
21	wj d	348							335	344
22										
23	Bore dia. Bottom of wing joint	16.6	Need to Average, usally oval; Finke1 16.4 x 16.8						14.9	16
24	Bore dia. top of boot joint small side	16.7							16.5	17
25	Bore dia. top of boot joint large side	24.6							24.9	25.1
26										
27	**III. Boot Lengths**									
28	bj logic	1	logic=> if bj logic = 0 => plug removed; if bj logic = 1 => plug cannot be removed						1	1
29	bj c	91	dist from top of boot to where topmost tone hole enter bore [not at center of tone hole]						88	81
30	bj b	147							145	151
31	bj a	193							191	199
32										
33	bjstotal [Needed for both boot logics]	419	total length of boot, include socket, along the small bore side, meas. With boot cap on						424	424
34	bjltotal [Needed for both boot logics]	419	total length of boot, include socket, along large bore side						424	424
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]	374	hook length along s bore => bjs-septum length = boot - septum <= calc the septum						385	384
39	bootl [Needed for both boot logics]	374	hook length along l bore => bjl-septum length = boot - septum <= calc the septum						385	384
40										
41	boots bottom [Needed for both boot logics]	23	use hook, dist of bore [dist on stick plus 7mm, diff between hook and bot of stick] 16 + 7 = 23						24	21
42	bootl bottom [Needed for both boot logics]	23	use hook, dist of bore [same as boots bot except tenon depth will be different]						24	21
43										
44	extreme bore [Needed for logic 1 only]	41.1	Outside dia of plug [measured] = small bore dia + large bore dia + the septum width						41.4	41.1
45			Finke1 used Grenser-Wiesner1 measurement; approximately correct							
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	45	dist. From very bottom of boot to spetum [bjl - bootl]	do not imput value					39	40
48	septum length - do not imput value	45	if bj logic = 0 => septum = septum exp; if bj logic = 1 => septum = septum c	do not imput value					39	40
49										
50	sbore dia sep* [Needed for both boot logics]	18.5	septum small bore dia [assume = lbore dia sep]						18.1	18.1
51	lbore dia sep* [Needed for both boot logics]	18.8	septum large bore dia [assume = sbore dia sep] [mesure if cork can be removed; for Logic 0]						18.9	18.7
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	3.8	septum width; calc. => extreme bore - sbore - lbore	do not imput value					4.4	4.3
54	sep width - do not imput value	3.8	if bj logic = 0 => sep width = sep width exp; if bj logic = 1 => sep width = se	do not imput value					4.4	4.3
55										
56	bj g	325	dist from top of boot (socket) to where G hole enters bore [not at cent of tone hole]						326	328
57	bj f1	127	dist from top of boot (socket) to where F1 hole enters bore [not at cent of tone hole]						122	122
58										
59										
60										
61										
62										
63	**IV. Tone Hole Diameters**									
64	f2	5.1							5.3	5.5
65	e	7							5.5	5.7
66	d	7.2							5.2	5.6
67										
68	c	7.3							6.6	7.8
69	b	8.1							6.7	7.3
70	a	7.3							5.5	6
71	g	9.8							9	9.1
72	f1	9.9							9.5	10
73										
74	e1	12.6	e1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]						11.3	14.2
75	d1	14.1	Finke1 vrfd large, a low C key; d1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]						10.5	11.6
76	c1	14.1	Finke1 oblong 12.6 x 13.1; c1 tone hole dia, on long joint [need to average NS and EW dias, NS usually greater]						12.5	14.1
77										
78										
79										
80										
81										
82	**V. Tone Hole Depths**		Finke1 wing joint tone holes short in lrngth, and not in straight line							
83	f2	22.6	Finke1 vrfd						25.1	30
84	e	17.2	Finke1 vrfd						30.5	32.8
85	d	21	Finke1 vrfd						32.7	36
86			Finke1 wind épaule not as normal, an enlarged section around wing							
87	c	20.6							24	26.5
88	b	24							25.3	26
89	a	23.6							26.7	30
90	g	14	meas along bot tone hole wall [north wall, toward reed,tone hole usually at angle]						17	16.5
91	f1	19	meas along east side tone hole wall [north wall, toward reed, T hole usually at angle]						24	22
92										
93	e1	7.6	e1 tone hole depth;meas east/west with deapth gauge [at center, or shortest dist]						8.4	7.8
94	d1	8.9	d1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]						7	7.8
95	c1	6.7	c1 tone hole depth; meas east/west with deapth gauge [at center, or shortest dist]						6.8	6.9
96			Finke1 vrfd long joint tone holes short							
97										
98										
99										
100										
101	**VI. Long Joint**		Finke1 There is a table along long joint							
102	lg_length	609	total length of long joint						604	617
103	lg_tenon_bot	42.2	length bottom tenon on long joint [tenon going into boot joint]						42.3	41.7
104	lj_bot_bore	23.4	Finke1 23.2 x 23.6; long joint bottom tenon bore diameter [tenon going into boot joint]						23	24.4
105	lj_top_bore	31.8	long joint top tenon bore diameter [tenon going into bell]						30.7	32.3
106	lg_tenon_top	36	length top tenon on long joint [tenon going into bell]						30.6	33.2
107	e1 distance	52	dist long joint tenon to e1 [from bot of tenon to where tone hole enters bore]						52	55
108	d1 distance	256	dist long joint tenon to d1 [from bot of tenon to where tone hole enters bore]						252	255
109	c1 distance	515	Finke1 vrfd; dist long joint tenon to c1 [from bot of tenon to where tone hole enters bore]						532	542
110										
111										
112										
113										
114										
115	**VII. Bore diameters at Tone Holes**									

	A	B	C	D	E	F	G	H	I	J
116	f2	11.4							11.8	11.8
117	e	12.3							12.8	13
118	d	13.2							13.2	13.3
119										
120	c	17.1							16.7	16.4
121	b	17.2							17.3	17.4
122	a	17.3							17.4	17.5
123	g	19.8							20.1	19.7
124	f1	23.3							22.6	23.2
125										
126	e1	24.7	e1 tone hole bore diameter on long joint						24.2	24.6
127	d1	28	d1 tone hole bore diameter on long joint						27.8	28
128	c1	31.1	c1 tone hole bore diameter on long joint						30.9	31.3
129										
130										
131										
132										
133										
134	**VIII. Bell**		Finke1 there is a plugged tone hole in the bell; c4mm dia. 151mm from socket							
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
136	bell_length (0, 1, 2)	294	total length of bell [lines 141 + 144 = line 136]						296	300
137	bell_bot_bore (0, 1, 2)	31.7	dia bore at the bottom of bell [end with socket]						32.2	31.7
138	bell_top_bore 0, (1, 0, 2)	32	Finke1 at bottom of bell flare, or bottom of caliper jaws, c. 38 at very top of bell; dia bore at the top of bell [low Bb exits]						33.5	33
139	bell_center_bore (only for logic 2)		dia bore at max center of expansion Finke1 row138 cont; at bottom of caliper jaws is the end of bore, then it flares							
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)	36.3	bell socket length						30.8	36
144	bell_expansion_length (only for logic 2)		distance of maxium expansion to top of bell [where Bb exits]							
145	belflg	60.5	Usually about 10mm more than line 138						40	46.5
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: Finke1-O-Leipzig3560-Wg1-WOB-DNM							
156										
157			Notes on long joint bore: Finke1, good, slightly OOR in places							
158			Notes on boot joint bore: Finke1, normal to good							
159	**XI. Bore Diameter Locations**		Notes on wing joint bore: Finke1, Normal							
160		21	Number of diameters						19	21
161	**Bell Bore**	7.6	Initial bore diameter [do not include in line 160 counting]						8.7	8.3
162	31.7mm dia. at socket	340	dist1; measured from the bottom of the wing joint- 10mm				1		377	415
163	31mm rod 90mm from socket	300	dist2; measured from the bottom of the wing joint- 11mm				1		320	350
164	30mm rod 180mm from socket	250	dist3; measured from the bottom of the wing joint- 12mm				1		265	285
165	31mm rod 35mm from bell	183	dist4; measured from the bottom of the wing joint- 13mm				1		200	226
166	32mm dia. at bell end	146	dist5; measured from the bottom of the wing joint- 14mm				1		125	110
167		80	dist6; measured from the bottom of the wing joint- 15mm	Bottom wing jt	16.6		1		0	55
168		0	dist7; measured from the top of the bootjoint - small bore side- 16mm	top boot small	16.7		1		0	0
169		88	dist8; measured from the top of the bootjoint - small bore side- 17mm	top boot large	24.6		2		105	110
170		305	Finke1 vrfd gap; dist9; measured from the top of the bootjoint - small bore side- 18mm				2		345	300
171		363	dist10; measured from the top of the bootjoint - large bore side- 19mm	sbore dia sep	18.5		3		370	365
172		317	dist11; measured from the top of the bootjoint - large bore side- 20mm	lbore dia sep	18.8		3		343	310
173		248	dist12; measured from the top of the bootjoint - large bore side- 21mm; totall	Hook Length	374		3		275	267
174		218	dist13; measured from the top of the bootjoint - large bore side- 22mm				3		225	220
175		160	dist14; measured from the top of the bootjoint - large bore side- 23mm				3		90	145
176		570	dist15; measured from the top of the long joint- 24mm	lj_bot_bore	23.4		4		555	85
177		533	dist16; measured from the top of the long joint- 25mm				4		490	545
178		440	dist17; measured from the top of the long joint- 26mm				4		441	460
179		418	dist18; measured from the top of the long joint- 27mm;				4		395	400
180		341	dist19; measured from the top of the long joint- 28mm;				4		328	355
181		216	Finke1 vrfd gap; dist20; measured from the top of the long joint- 29mm				4		270	305
182		173	dist21; measured from the top of the long joint- 30mm				4		170	170
183		100	dist22; measured from the top of the long joint- 31mm;				4		0	95
184		0	dist23; measured from the top of the long joint- 32mm;	lj_top_bore	31.8		4		0	0
185										10
186										11
187										12
188										13
189										14
190										15
191										16
192										17
193										18
194										19
195										20
196										21
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198										23
199										24
200										25
201										26
202										27
203										28
204										29
205										30
206										31
207										32