|  | A | B | C | D | E | F | G | H | I | J |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | I. Bocal |  | Original bocal; Porthaux11 no |  |  |  |  |  |  | Porthaux9 |
| 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 | ocal lo | $=2$ | > no | ocal |  |  | 2 |
| 9 |  |  |  |  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |  |  |  |
| 11 |  |  |  |  |  |  |  |  |  |  |
| 12 |  |  |  |  |  |  |  |  |  |  |
| 13 | II. Wing Joint Lengths |  | bocal receiver: Porthaux11 no |  |  |  |  |  |  |  |
| 14 | choke bore dia. | 9.7 | logic 1; bore diameter of choke; logic 0; either diameter bocal bottom or begin | f bore | bito | or r | eiver |  |  | 9.3 |
| 15 | receiver length ( 1,0 ) (formally choke length) | 62 | logic 1; length of choke from top of wing joint; logic 0 ; length of receiver (same | tring le |  |  |  |  |  | 50 |
| 16 | wing joint length | 507 | Porthaux11 wing tenone has been replace; total wing ioint length, including ten | nd soc |  |  |  |  |  | 512 |
| 17 | tenon length | 44.9 | tenon length |  |  |  |  |  |  | 42.5 |
| 18 |  |  |  |  |  |  |  |  |  |  |
| 19 | wj f2 | 211 | dist top of wing to where tone hole enters bore [not at the center of the tone ho |  |  |  |  |  |  | 225 |
| 20 | wj e | 286 |  |  |  |  |  |  |  | 305 |
| 21 | wj d | 326 |  |  |  |  |  |  |  | 341 |
| 22 |  |  |  |  |  |  |  |  |  |  |
| 23 | Bore dia. Bottom of wing joint | 13.6 | Porthaux11 vrfd $13.4 \times 13.8$ Need to Average |  |  |  |  |  |  | 15 |
| 24 | Bore dia. top of boot joint small side | 15.5 | Porthaux11 vifd gap |  |  |  |  |  |  | 15.5 |
| 25 | Bore dia. top of boot joint large side | 23.3 | Porthaux11 OOR $23.1 \times 23.4$, vrfd small |  |  |  |  |  |  | 24.9 |
| 26 |  |  |  |  |  |  |  |  |  |  |
| 27 | III. Boot Lengths |  |  |  |  |  |  |  |  |  |
| 28 | bj logic | 1 | logic=> if bj logic = 0 => plug removed; if bj logic = 1 => plug cannot be remo |  |  |  |  |  |  | 1 |
| 29 | bj c | 87 | dist from top of boot to where topmost tone hole enter bore [not at center of to |  |  |  |  |  |  | 91 |
| 30 | bj b | 156 |  |  |  |  |  |  |  | 155 |
| 31 | bj a | 209 |  |  |  |  |  |  |  | 193 |
| 32 |  |  | Porthaux11, plug fell out, used logic 1 |  |  |  |  |  |  |  |
| 33 | bjstotal [Needed for both boot logics] | 430 | total length of boot, include socket, along the small bore side, meas. With boot | remov |  |  |  |  |  | 432 |
| 34 | bjltotal [Needed for both boot logics] | 430 | total length of boot, include socket, along large bore side |  |  |  |  |  |  | 432 |
| 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 |  |  |  |  |  |  | 0 |
| 37 |  |  |  |  |  |  |  |  |  |  |
|  | boots [Needed for both boot logics] | 392 | hook length along s bore $=>$ bjs-septum length $=$ boot - septum <= calc the se |  |  |  |  |  |  | 394 |
| 39 | bootl [Needed for both boot logics] | 392 | hook length along \| bore $=>$ bjl-septum length $=$ boot - septum $<=$ calc the sep |  |  |  |  |  |  | 394 |
| 40 |  |  |  |  |  |  |  |  |  |  |
|  | boots bottom [Needed for both boot logics] | 22 | use hook, dist of bore [dist on stick plus 7 mm , diff between hook and bot of stic | + 7 |  |  |  |  |  | 17 |
| 42 | bootl bottom [Needed for both boot logics] | 22 | use hook, dist of bore [same as boots bot except tenon depth will be different] |  |  |  |  |  |  | 17 |
| 43 |  |  |  |  |  |  |  |  |  |  |
| 44 | extreme bore [Needed for logic 1 only] | 42.1 | Outside dia of plug [measured] = small bore dia + large bore dia + the septum |  |  |  |  |  |  | 39 |
| 45 |  |  |  |  |  |  |  |  |  |  |
| 46 | septum length exp [Need for logic 0 only] | 39 | dist. from very bottom of boot to septum [point between the large and small bo |  |  |  |  |  |  | 0 |
| 47 | septum length calc - do not imput value | 38 | dist. From very bottom of boot to spetum [bjl - bootl] | ot imp | alue |  |  |  |  | 38 |
| 48 | septum length - do not imput value | 38 | if bil logic $=0=>$ septum $=$ septum exp; if bi logic $=1=>$ septum $=$ septum c; | ot imp | alue |  |  |  |  | 38 |
| 49 |  |  |  |  |  |  |  |  |  |  |
| 50 | sbore dia sep* [Needed for both boot logics] | 18.7 | septum small bore dia [assume $=$ Ibore dia sep] |  |  |  |  |  |  | 18.6 |
| 51 | Ibore dia sep* [Needed for both boot logics] | 18.7 | septum large bore dia [assume = sbore dia sep] [mesure if cork can be remove | Logic |  |  |  |  |  | 19 |
| 52 | sep width exp [Need for logic 0 only] | 5.2 | septum width; direct measurement if remove plug |  |  |  |  |  |  | 0 |
| 53 | sep width calc - do not imput value | 4.7 | septum width; calc. => extreme bore - sbore - lbore | ot imp | alue |  |  |  |  | 1.4 |
| 54 | sep width - do not imput value | 4.7 | if bil logic $=0=>$ sep width $=$ sep width exp; if bj logic $=1=>$ sep width $=$ ser | ot imp | alue |  |  |  |  | 1.4 |
| 55 |  |  |  |  |  |  |  |  |  |  |
| 56 | bj g | 337 | dist from top of boot (socket) to where G hole enters bore [not at cent of tone hor |  |  |  |  |  |  | 335 |
| 57 | bj f1 | 145 | dist from top of boot (socket) to where F1 hole enters bore [not at cent of tone |  |  |  |  |  |  | 139 |
| 58 |  |  |  |  |  |  |  |  |  |  |
| 59 |  |  |  |  |  |  |  |  |  |  |
| 60 |  |  |  |  |  |  |  |  |  |  |
| 61 |  |  |  |  |  |  |  |  |  |  |
| 62 |  |  |  |  |  |  |  |  |  |  |
| 63 | IV. Tone Hole Diameters |  |  |  |  |  |  |  |  |  |
| 64 | f2 | 6 |  |  |  |  |  |  |  | 5.1 |
| 65 | e | 5.9 |  |  |  |  |  |  |  | 6.1 |
| 66 | d | 6.3 |  |  |  |  |  |  |  | 5.4 |
| 67 |  |  |  |  |  |  |  |  |  |  |
| 68 | c | 7.5 |  |  |  |  |  |  |  | 7.7 |
| 69 | b | 7.3 |  |  |  |  |  |  |  | 7 |
|  | a | 6.5 |  |  |  |  |  |  |  | 5.7 |
| 71 | g | 8.7 |  |  |  |  |  |  |  | 9.4 |
| 72 | f1 | 9 |  |  |  |  |  |  |  | 9.3 |
| 73 |  |  |  |  |  |  |  |  |  |  |
| 74 | e1 | 9.4 | e1 tone hole dia, on long joint [need to average NS and EW dias, NS usually gre |  |  |  |  |  |  | 10.4 |
| 75 | d1 | 8.1 | d1 tone hole dia, on long joint [need to average NS and EW dias, NS usually gre |  |  |  |  |  |  | 8 |
| 76 | c1 | 14.4 | Porthaux11 Oblong $14.2 \times 14.6$; c1 tone hole dia, on long joint [need to average | and EW | S, N | usu | $y$ grea |  |  | 12.8 |
| 77 |  |  |  |  |  |  |  |  |  |  |
| 78 |  |  |  |  |  |  |  |  |  |  |
| 79 |  |  |  |  |  |  |  |  |  |  |
| 80 |  |  |  |  |  |  |  |  |  |  |
| 81 |  |  |  |  |  |  |  |  |  |  |
| 82 | V. Tone Hole Depths |  |  |  |  |  |  |  |  |  |
| 83 | f2 | 32 |  |  |  |  |  |  |  | 29 |
| 84 | e | 31.2 |  |  |  |  |  |  |  | 33 |
| 85 | d | 34.4 | Porthaux11 vrfd, extreme angle, tone hole not drilled totally into center of bore |  |  |  |  |  |  | 34 |
| 86 |  |  |  |  |  |  |  |  |  |  |
| 87 | c | 26.5 |  |  |  |  |  |  |  | 23.8 |
| 88 | b | 23 |  |  |  |  |  |  |  | 27 |
| 89 | a | 26 | Porthaux11 vrfd, extreme downward angle |  |  |  |  |  |  | 23.6 |
| 90 | g | 17.5 | meas along bot tone hole wall [north wall, toward reed, tone hole usually at angle |  |  |  |  |  |  | 14.2 |
| 91 | f1 | 20 | meas along east side tone hole wall [north wall, toward reed,t hole usually at an |  |  |  |  |  |  | 24 |
| 92 |  |  | , whar |  |  |  |  |  |  |  |
| 93 | e1 | 8 | e1 tone hole depth;meas east/west with deapth gauge [at center, or shortest did |  |  |  |  |  |  | 8 |
| 94 | d1 | 8 | d1 tone hole depth; meas east/west with deapth gauge [at center, or shortest |  |  |  |  |  |  | 5.5 |
| 95 | c1 | 8 | c1 tone hole depth; meas east/west with deapth gauge [at center, or shortest d |  |  |  |  |  |  | 7 |
| 96 |  |  | Porthaux11, vffd all long joint tone hole depths the same |  |  |  |  |  |  |  |
| 97 |  |  |  |  |  |  |  |  |  |  |
| 98 |  |  |  |  |  |  |  |  |  |  |
| 99 |  |  |  |  |  |  |  |  |  |  |
| 100 |  |  |  |  |  |  |  |  |  |  |
| 101 | VI. Long Joint |  | Porthaux11 a table along long joint |  |  |  |  |  |  |  |
| 102 | lg_length | 563 | Porthaux11 vrfd short; total lenath of lonq joint |  |  |  |  |  |  | 581 |
| 103 | lg_tenon_bot | 46 | length bottom tenon on long joint [tenon going into boot joint] |  |  |  |  |  |  | 46.5 |
| 104 | lj_bot_bore | 23.6 | long joint bottom tenon bore diameter [tenon going into boot joint] |  |  |  |  |  |  | 24.8 |
| 105 | lj_top_bore | 32.5 | long joint top tenon bore diameter [tenon going into bell] |  |  |  |  |  |  | 32 |
|  | Iq_tenon top | 38.6 | length top tenon on long ioint [tenon going into bell] |  |  |  |  |  |  | 34.5 |


|  | A | B | C | D | E | F | G | H | I | J |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 107 | e1 distance | 48 | Porthaux11 vrfd short; dist long joint tenon to e1 [from bot of tenon to where to | ne hole enter | bore] |  |  |  |  | 50 |
| 108 | d1 distance | 247 | Porthaux11 vrfd short; dist long joint tenon to d1 [from bot of tenon to where to | one hole enter | bore] |  |  |  |  | 251 |
| 109 | c1 distance | 454 | Porthaux11 vrfd short; dist long joint tenon to c1 [from bot of tenon to where to | ne hole enter | bore] |  |  |  |  | 467 |
| 110 |  |  |  |  |  |  |  |  |  |  |
| 111 |  |  |  |  |  |  |  |  |  |  |
| 112 |  |  |  |  |  |  |  |  |  |  |
| 113 |  |  |  |  |  |  |  |  |  |  |
| 114 |  |  |  |  |  |  |  |  |  |  |
| 115 | VII. Bore diameters at Tone Holes |  |  |  |  |  |  |  |  |  |
| 116 | f2 | 12 |  |  |  |  |  |  |  | 12.3 |
| 117 | e | 13 | Porthaux11 vrfd 13.0 |  |  |  |  |  |  | 13.3 |
| 118 | d | 13.5 |  |  |  |  |  |  |  | 13.8 |
| 119 |  |  |  |  |  |  |  |  |  |  |
| 120 | c | 15.5 |  |  |  |  |  |  |  | 16.2 |
| 121 | b | 16.1 |  |  |  |  |  |  |  | 17 |
| 122 | a | 17 | Porthaux11 vrfd 17.0 |  |  |  |  |  |  | 17.4 |
| 123 | g | 19.6 |  |  |  |  |  |  |  | 19.1 |
| 124 | f1 | 22.1 |  |  |  |  |  |  |  | 23.2 |
| 125 |  |  |  |  |  |  |  |  |  |  |
| 126 | e1 | 24.2 | e1 tone hole bore diameter on long joint |  |  |  |  |  |  | 25.4 |
| 127 | d1 | 27.3 | d1 tone hole bore diameter on long joint |  |  |  |  |  |  | 28.9 |
| 128 | c1 | 31.2 | c1 tone hole bore diameter on long joint |  |  |  |  |  |  | 30.5 |
| 129 |  |  |  |  |  |  |  |  |  |  |
| 130 |  |  |  |  |  |  |  |  |  |  |
| 131 |  |  |  |  |  |  |  |  |  |  |
| 132 |  |  |  |  |  |  |  |  |  |  |
| 133 |  |  |  |  |  |  |  |  |  |  |
| 134 | VIII. Bell No Bell |  |  |  |  |  |  |  |  |  |
| 135 | bell logic |  | If bell_logic $=0=>$ normal conical bore; if bell_logic $=1=>$ inverted concial bo | re; if bell_log | $c=2$ | > | expan |  |  | 1 |
| 136 | bell_length ( $0,1,2$ ) |  | total length of bell [lines $141+144=$ line 136] |  |  |  |  |  |  | 315 |
| 137 | bell_bot_bore (0, 1, 2) |  | dia bore at the bottom of bell [end with socket] |  |  |  |  |  |  | 32.1 |
| 138 | bell_top_bore 0, (1, 0, 2) |  | dia bore at the top of bell [where low Bb exits] |  |  |  |  |  |  | 30.6 |
| 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) |  | bell socket length |  |  |  |  |  |  | 38.2 |
| 144 | bell_expansion_length (only for logic 2) |  | distance of maxium expansion to top of bell [where Bb exits] |  |  |  |  |  |  |  |
| 145 | belflg |  |  |  |  |  |  |  |  | 43 |
| 146 |  |  |  |  |  |  |  |  |  |  |
| 147 |  |  |  |  |  |  |  |  |  |  |
| 148 | IX. PITCH |  |  |  |  |  |  |  |  |  |
| 149 | pitch | 430 | input the historical pitch of the bassoon, must input value, best guess |  |  |  |  |  |  | 430 |
| 150 | freq_init | 380 | Initial frequency range variable |  |  |  |  |  |  | 380 |
| 151 | Delta frequency | 2 | frequency increment parameter |  |  |  |  |  |  | 2 |
| 152 | Number of frequencies | 60 | number of frequencies to scan for min chi sq |  |  |  |  |  |  | 60 |
| 153 | Frequency adjust | 1.05 | frequency adjustment parameter |  |  |  |  |  |  | 1.05 |
| 154 | X. Title |  |  |  |  |  |  |  |  |  |
| 155 | title |  | Bassoon Calculation: Porthaux11-O-BrusMIMIDK0026-Wg1-WOB-DNM |  |  |  |  |  |  |  |
| 156 |  |  |  |  |  |  |  |  |  |  |
| 157 |  |  | Notes on long joint bore: Porthaux11, normal |  |  |  |  |  |  | 0 |
| 158 |  |  | Notes on boot joint bore: Porthaux11, down normal; up good |  |  |  |  |  |  |  |
| 159 | XI. Bore Diameter Locations |  | Notes on wing joint bore: Porthaux11, normal |  |  |  |  |  |  |  |
| 160 |  | 22 | Number of diameters |  |  |  |  |  |  | 19 |
| 161 | Bell Bore; No Bell | 9.7 | Initial bore diameter [do not include in line 160 counting] |  |  |  |  |  |  | 9.3 |
| 162 |  | 420 | dist1; measured from the bottom of the wing joint- 10 mm |  |  |  | 1 |  |  | 415 |
| 163 |  | 332 | dist2; measured from the bottom of the wing joint- 11 mm |  |  |  | 1 |  |  | 362 |
| 164 |  | 297 | dist3; measured from the bottom of the wing joint- 12 mm |  |  |  | 1 |  |  | 310 |
| 165 |  | 230 | Porthaux11 OOR; dist4; measured from the bottom of the wing joint- 13 mm |  |  |  | 1 |  |  | 220 |
| 166 |  | 140 | dist5; measured from the bottom of the wing joint- 14 mm |  |  |  | 1 |  |  | 155 |
| 167 |  | 0 | dist6; measured from the bottom of the wing joint-15mm | Bottom wing | 13.6 |  | 1 |  |  | 0 |
| 168 |  | 146 | dist7; measured from the top of the bootjoint - small bore side- 16mm; was 10 | top boot smi | 15.5 |  | 2 |  |  | 80 |
| 169 |  | 204 | dist8; measured from the top of the bootjoint - small bore side- 17mm; was 15 | top boot larg | 23.3 |  | 2 |  |  | 0 |
| 170 |  | 288 | dist9; measured from the top of the bootjoint - small bore side- 18mm |  |  |  | 2 |  |  | 215 |
| 171 |  | 382 | dist10; measured from the top of the bootjoint - large bore side- 19mm; was 3 | sbore dia se, | 18.7 |  | 3 |  |  | 0 |
| 172 |  | 330 | dist11; measured from the top of the bootjoint - large bore side- 20 mm ; yes 2: | lbore dia sep | 18.7 |  | 3 |  |  | 295 |
| 173 |  | 237 | dist12; measured from the top of the bootioint - large bore side- 21 mm ; yes 1: | Hook Length | 392 |  | 3 |  |  | 275 |
| 174 |  | 164 | dist13; measured from the top of the bootjoint - large bore side- 22 mm |  |  |  | 3 |  |  | 255 |
| 175 |  | 80 | dist14; measured from the top of the bootjoint - large bore side- 23 mm |  |  |  | 3 |  |  | 190 |
| 176 |  | 534 | dist15; measured from the top of the long joint- 24 mm | lj_bot_bore | 23.6 |  | 4 |  |  | 95 |
| 177 |  | 473 | dist16; measured from the top of the long joint- 25 mm |  |  |  | 4 |  |  | 555 |
| 178 |  | 403 | dist17; measured from the top of the long joint- 26 mm |  |  |  | 4 |  |  | 465 |
| 179 |  | 335 | dist18; measured from the top of the long joint- 27 mm |  |  |  | 4 |  |  | 390 |
| 180 |  | 272 | dist19; measured from the top of the long joint- 28 mm |  |  |  | 4 |  |  | 360 |
| 181 |  | 232 | dist20; measured from the top of the long joint- 29 mm |  |  |  | 4 |  |  | 295 |
| 182 |  | 185 | dist21; measured from the top of the long joint-30mm |  |  |  | 4 |  |  | 155 |
| 183 |  | 121 | dist22; measured from the top of the long joint-31mm |  |  |  | 4 |  |  | 70 |
| 184 |  | 51 | dist23; measured from the top of the long ioint- 32 mm | li top bore | 32.5 |  | 4 |  |  | 0 |

