

#### **4-key fagottino, Johannes & Georg H. SCHERER (3), Butzbach, 1760-70**

<b>BASIC - OUTSIDE</b>	<b>mm</b>	<b>mm</b>	<b>Comments</b>
<b>Joint lengths</b>			
Standing length to bell	641		With ferrule
Standing length to wing joint	455		With ferrule
Wing joint length	261		
Wing joint - tenon length	28.4		
Butt joint length	222		With ferrules
Long joint length	298		
Long joint - south tenon length	23.3		
Long joint - north tenon length	25		
Bell length	168	168.5	Without ferrule/with
Vent hole distance from north	x		
Vent hole approx diameter	x		
<b>Tone hole distance, axis</b>			
Wing - tone hole 1 distance from north	107.5		
Wing - tone hole 2 distance from north	135.5		
Wing - tone hole 3 distance from north	164		
Butt - tone hole 4 distance from north	52		
Butt - tone hole 5 distance from north	74.5		
Butt - tone hole 6 distance from north	100		
Butt - tone hole F distance from north	191		
Butt - tone hole E distance from north	75		
Butt - tone hole Ab distance from north	172		
Butt - tone hole F# distance from north	x		
Long joint - tone hole D distance from north	265		
Long joint - tone hole Eb distance from north	x		
Long joint - tone hole C distance from north	162		Irregular, oval tone hole

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Long joint - tone hole Bb distance from north	40		Small repair under tone hole
Wing - major axis at tone hole 1	33.1		
Wing - major axis at tone hole 2	32.4		
Wing - major axis at tone hole 3	32.3		
Butt - major axis (side to side) at tone hole 4	51.6		
Butt - minor axis (front to back) at tone hole 4	33.7		
Butt - major axis (side to side) at tone hole 5	51.4		
Butt - minor axis (front to back) at tone hole 5	33		
Butt - major axis (side to side) at tone hole 6	51.3		
Butt - minor axis (front to back) at tone hole 6	32.2		Surface area reduced
Butt - major axis (side to side) at tone hole F	47.2		
Butt - minor axis (front to back) at tone hole F	31.2		
Butt - major axis (side to side) at tone hole E	51.4		
Butt - minor axis (front to back) at tone hole E	32.9		
Butt - major axis (side to side) of the bottom butt ellipse	44.6		Without ferrule
Butt - minor axis (front to back) of the bottom butt ellipse	30.2		Without ferrule
Butt - major axis (side to side) of the top butt ellipse	52.9		With ferrule
Butt - minor axis (front to back) of the top butt ellipse	36		With ferrule
Butt - cork major axis (side to side)	39.2		One cork
Butt - cork minor axis (front to back)	18.6		
Long joint - minor axis (front to back) at tone hole D	27.9		
Long joint - major axis (side to side) at tone hole D	27.6		
Long joint - minor axis (front to back) at tone hole Eb	x		

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Long joint - major axis (side to side) at tone hole Eb	x		
Long joint - minor axis (front to back) at tone hole C	29		
Long joint - major axis (side to side) at tone hole C	28.9		
Long joint - minor axis (front to back) at tone hole Bb	31.3		
Long joint - major axis (side to side) at tone hole Bb	30.3		
<b>Tone hole angle, Ø, length</b>			
Wing - tone hole 1 angle	31.5° North		
Wing - tone hole 2 angle	9° South		
Wing - tone hole 3 angle	30.5° South		
Wing - tone hole 1 approx. Ø	4		
Wing - tone hole 2 approx. Ø	4.1		
Wing - tone hole 3 approx. Ø	4		
Wing - tone hole 1 approx. length	13.9		
Wing - tone hole 2 approx. length	10.5		
Wing - tone hole 3 approx. length	11.5		
Butt - tone hole 4 angle	21.5° North		
Butt - tone hole 5 angle	11° South		
Butt - tone hole 6 angle	29° South		
Butt - tone hole E angle	17.5° South		
Butt - tone hole 4 approx. Ø	5.9		
Butt - tone hole 5 approx. Ø	5.7		
Butt - tone hole 6 approx. Ø	4.8		
Butt - tone hole E approx. Ø	8.3		
Butt - tone hole 4 approx. length	14.5		

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Butt - tone hole 5 approx. length	14.4		
Butt - tone hole 6 approx. length	15.4		
Butt - tone hole E approx. length	7.5		
Long joint - tone hole C angle	0°		Undercutting north,south edges
Long joint - tone hole C Ø	8.9	10.3	Very oval
Long joint - tone hole C approx. length	3.9		
<b>BASIC - INSIDE</b>			
<b>Inner bore length</b>			
Bore length	1090.6		
Wing joint - bore length	262		
Butt - small bore length	209		
Butt - big bore length	209		
Butt - small bore socket length	28.5		Irregular
Butt - big bore socket length	28.5		Irregular
Butt - small bore beginning of septum	184		Difficult to measure
Butt - big bore beginning of septum	183		Difficult to measure
Long joint - bore length	299		
Bell - bore length	169		
<b>Inner bore beginning Ø (not socket!)</b>	<b>Min.</b>	<b>Max.</b>	
Wing bore Ø north	7.7	7.7	
Wing bore Ø south	12.4	12.7	
Bocal well length	21		
Butt - small bore Ø north	13.8	14.2	
Butt - big bore Ø north	17.8	18	
Long joint Ø north	22	22.5	
Long joint Ø south	16.8	17.3	
Bell bore Ø north	21.2	21.7	

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Bell bore Ø south	27.1	27.6	
Bell socket length	25.4		
Bocal Ø at the beginning	x	x	Not round; external Ø 4–4.2 mm
Bocal thickness at the beginning	0.2	0.3	
Bocal Ø at the tenon	x	x	External Ø 8.2–8.4 mm
Bocal thickness at the tenon	0.3	0.4	
Bocal length (along top)	244		
<b>COMPLETE - OUTSIDE</b>	<b>Min.</b>	<b>Max.</b>	
Bocal well thickness with ferrule	4.3	4.7	
Bocal well ferrule thickness	0.2	0.2	
Wing - tenon thickness	2	2.4	
Wing - tenon northern extern. Ø	17.5	17.7	
Wing - tenon southern extern. Ø	17.1	17 3	
Wing - tone hole A distance from north	x		
Wing - tone hole A angle	x		
Wing - tone hole A extern. Ø	x		
Wing - tone hole A approx. length	x		
Wing - tone hole C distance from north	x		
Wing - tone hole C angle	x		
Wing - tone hole C extern. Ø	x		
Wing - tone hole C approx. length	x		
Butt - big socket thickness with ferrule	6.1		Irregular, loose ferrule
Butt - small socket thickness with ferrule	2.7		Irregular, loose ferrule
Butt - top ferrule thickness	0.4	0.5	
Minimum wall thickness between butt sockets	2.5		
Butt - wood space between corks - bottom	x		

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Butt - big bore cork Ø - bottom	x		
Butt - small bore cork Ø - bottom	x		
Butt - wood wall between cork/front - small bore	6		Irregular
Butt - wood wall between cork/front - big bore	7.2		Irregular
Butt - wood wall between cork/back - small bore	4.5		Irregular
Butt - wood wall between cork/back - big bore	3.5		Irregular
Wood wall between cork/side - small bore	1.4		Irregular
Wood wall between cork/side - big bore	3.2		Irregular
Butt - bottom ferrule thickness	0.5	0.7	
Long joint - south tenon thickness	1.3	2	
Long joint - south tenon northern extern. Ø	20.6	21.2	With thread
Long joint - south tenon southern extern. Ø	19.5	20.2	
Long joint - north tenon thickness	1.6	1.8	
Long joint - north tenon northern extern. Ø	25.4	26.2	
Long joint - north tenon southern extern. Ø	25.2	25.7	
Bell socket thickness with brass	1.2	1.8	Without brass: 1.4/1
Brass thickness of the bell ferrule	0.3	0.4	
Bell ferrule height	10.3		
<b>Tone hole angle, Ø, length</b>	<b>Min.</b>	<b>Max.</b>	
Butt - tone hole Ab angle	11.5° South		
Butt - tone hole F angle	12.5° North		
Butt - tone hole F# angle	x		
Butt - tone hole Ab approx. Ø	3.7		
Butt - tone hole F approx. Ø	6.5		
Butt - tone hole F# approx. Ø	x		
Butt - tone hole Ab approx. length	10.1		
Butt - tone hole F approx. length	13.8		

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Butt - tone hole F# approx. length	x		
Long joint - tone hole D angle	0		
Long joint - tone hole E $\flat$ angle	x		
Long joint - tone hole B $\flat$ angle	0		
Long joint - tone hole D approx. $\emptyset$	8.4	8.8	
Long joint - tone hole E $\flat$ approx. $\emptyset$	x		
Long joint - tone hole B $\flat$ approx. $\emptyset$	8.2	8.6	
Long joint - tone hole D approx. length	5.3		
Long joint - tone hole E $\flat$ approx. length	x		
Long joint - tone hole B $\flat$ approx. length	5.1		
<b>COMPLETE - INSIDE</b>			
Wing - tone hole 1 distance from south	162.5		
Wing - tone hole 2 distance from south	125		
Wing - tone hole 3 distance from south	93		
Wing - tone hole A distance from south	x		
Wing - tone hole C distance from south	x		
Butt - tone hole 4 distance from north	45		
Butt - tone hole 5 distance from north	74.5		
Butt - tone hole 6 distance from north	105		
Butt - tone hole Ab distance from north	171		
Butt - tone hole F distance from north	187		
Butt - tone hole F# distance from north	x		
Butt - tone hole E distance from north	75		
Long joint - tone hole D distance from north	263.5		
Long joint- tone hole E $\flat$ distance from north	x		
Long joint - tone hole C distance from north	160		
Long joint - hole B $\flat$ distance from north	39		

<b>4-key <i>fagottino</i>, Johannes &amp; Georg H. SCHERER (3), Butzbach, 1760-70</b>			
Bell - vent hole distance from north	x		
<b>EXTRAS</b>			
(New) single cork			
Butt joint - Ø beginning of big bore south	15.4	15.5	