***12-key tenoroon,* Johann STEHLE, Vienna, 1830–50**			
BASIC - OUTSIDE	**mm**	**mm**	**Comments**
Joint lengths			**Only partial measurements**
Standing length to bell	950		With ferrule (loose): 952
Standing length to wing joint	658.8		With ferrule (loose): 660
Wing joint length	368.5		
Wing joint - tenon length	37.4		With metal reenforcement
Butt joint length	327.5		With ferrule: 329
Long joint length	438		
Long joint - south tenon length	37		
Long joint - north tenon length	28.3		
Bell length	249		
Vent hole distance from north	x		
Vent hole approx diameter	x		
Tone hole distance, axis			
Wing - tone hole 1 distance from north	181		
Wing - tone hole 2 distance from north	213.5		
Wing - tone hole 3 distance from north	243.5		
Butt - tone hole 4 distance from north	90		
Butt - tone hole 5 distance from north	120		
Butt - tone hole 6 distance from north	157.5		
Butt - tone hole F distance from north	x		
Butt - tone hole E distance from north	113		
Butt - tone hole Ab distance from north	x		
Butt - tone hole F# distance from north	x		

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Long joint - tone hole D distance from north	x		
Long joint - tone hole Eb distance from north	x		
Long joint - tone hole C distance from north	x		Covered
Long joint - tone hole Bb distance from north	x		
Wing - major axis at tone hole 1	x		
Wing - major axis at tone hole 2	x		
Wing - major axis at tone hole 3	x		
Butt - major axis (side to side) at tone hole 4	x		
Butt - minor axis (front to back) at tone hole 4	x		
Butt - major axis (side to side) at tone hole 5	x		
Butt - minor axis (front to back) at tone hole 5	x		
Butt - major axis (side to side) at tone hole 6	x		
Butt - minor axis (front to back) at tone hole 6	x		
Butt - major axis (side to side) at tone hole F	x		
Butt - minor axis (front to back) at tone hole F	x		
Butt - major axis (side to side) at tone hole E	x		
Butt - minor axis (front to back) at tone hole E	x		
Butt - major axis (side to side) of the bottom butt ellipse	x		
Butt - minor axis (front to back) of the bottom butt ellipse	x		
Butt - major axis (side to side) of the top butt ellipse	x		
Butt - minor axis (front to back) of the top butt ellipse	x		
Butt - cork major axis (side to side)	x		

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Butt - cork minor axis (front to back)	x		
Long joint - minor axis (front to back) at tone hole D	x		
Long joint - major axis (side to side) at tone hole D	x		
Long joint - minor axis (front to back) at tone hole Eb	x		
Long joint - major axis (side to side) at tone hole Eb	x		
Long joint - minor axis (front to back) at tone hole C	x		
Long joint - major axis (side to side) at tone hole C	x		
Long joint - minor axis (front to back) at tone hole Bb	x		
Long joint - major axis (side to side) at tone hole Bb	x		
Tone hole angle, Ø, length			
Wing - tone hole 1 angle	x		
Wing - tone hole 2 angle	x		
Wing - tone hole 3 angle	x		
Wing - tone hole 1 approx. Ø	x		
Wing - tone hole 2 approx. Ø	x		
Wing - tone hole 3 approx. Ø	x		
Wing - tone hole 1 approx. length	x		
Wing - tone hole 2 approx. length	x		
Wing - tone hole 3 approx. length	x		
Butt - tone hole 4 angle	x		
Butt - tone hole 5 angle	x		
Butt - tone hole 6 angle	x		
Butt - tone hole E angle	x		

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Butt - tone hole 4 approx. Ø	x		
Butt - tone hole 5 approx. Ø	x		
Butt - tone hole 6 approx. Ø	x		
Butt - tone hole E approx. Ø	x		
Butt - tone hole 4 approx. length	x		
Butt - tone hole 5 approx. length	x		
Butt - tone hole 6 approx. length	x		
Butt - tone hole E approx. length	x		
Long joint - tone hole C angle	x		
Long joint - tone hole C Ø	x		
Long joint - tone hole C approx. length	x		
BASIC - INSIDE			
Inner bore length			
Bore length	1602.5		
Wing joint - bore length	369		
Butt - small bore length	305.5		
Butt - big bore length	306		
Butt - small bore socket length	37		
Butt - big bore socket length	37		
Butt - small bore beginning of septum	286		
Butt - big bore beginning of septum	285.5		
Long joint - bore length	440		
Bell - bore length	250		
Inner bore beginning Ø (not socket!)	**Min.**	**Max.**	
Wing bore Ø north	x		

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Wing bore Ø south	x		
Bocal well length	23		
Butt - small bore Ø north	x		
Butt - big bore Ø north	x		
Long joint Ø north	x		
Long joint Ø south	x		
Bell bore Ø north	x		
Bell bore Ø south	x		
Bell socket length	29		
Bocal Ø at the beginning	3.7	3.8	
Bocal thickness at the beginning	0.2		
Bocal Ø at the tenon	7.6	7.8	
Bocal thickness at the tenon	0.6	0.8	
Bocal length (along top)	173		
COMPLETE - OUTSIDE	**Min.**	**Max.**	
Bocal well thickness with ferrule	x		
Bocal well ferrule thickness	x		
Wing - tenon thickness	x		
Wing - tenon northern extern. Ø	x		
Wing - tenon southern extern. Ø	x		
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		

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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	x		
Butt - small socket thickness with ferrule	x		
Butt - top ferrule thickness	x		
Minimum wall thickness between butt sockets	x		
Butt - wood space between corks - bottom	x		
Butt - big bore cork Ø - bottom	x		
Butt - small bore cork Ø - bottom	x		
Butt - wood wall between cork/front - small bore	x		
Butt - wood wall between cork/front - big bore	x		
Butt - wood wall between cork/back - small bore	x		
Butt - wood wall between cork/back - big bore	x		
Wood wall between cork/side - small bore	x		
Wood wall between cork/side - big bore	x		
Butt - bottom ferrule thickness	x		
Long joint - south tenon thickness	x		
Long joint - south tenon northern extern. Ø	x		
Long joint - south tenon southern extern. Ø	x		
Long joint - north tenon thickness	x		
Long joint - north tenon northern extern. Ø	x		
Long joint - north tenon southern extern. Ø	x		
Bell socket thickness with brass	x		
Brass thickness of the bell ferrule	x		

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Bell ferrule height	x		
Tone hole angle, Ø, length			
Butt - tone hole Ab angle	x		
Butt - tone hole F angle	x		
Butt - tone hole F♯ angle	x		
Butt - tone hole Ab approx. Ø	x		
Butt - tone hole F approx. Ø	x		
Butt - tone hole F♯ approx. Ø	x		
Butt - tone hole Ab approx. length	x		
Butt - tone hole F approx. length	x		
Butt - tone hole F# approx. length	x		
Long joint - tone hole D angle	x		
Long joint - tone hole E ♭ angle	x		
Long joint - tone hole B ♭ angle	x		
Long joint - tone hole D approx. Ø	x		
Long joint - tone hole E ♭ approx. Ø	x		
Long joint - tone hole B ♭ approx.Ø	x		
Long joint - tone hole D approx. length	x		
Long joint - tone hole E ♭ approx. length	x		
Long joint - tone hole B ♭ approx. length	x		
COMPLETE - INSIDE			
Wing - tone hole 1 distance from south	x		
Wing - tone hole 2 distance from south	x		
Wing - tone hole 3 distance from south	x		
Wing - tone hole A distance from south	x		

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Wing - tone hole C distance from south	x		
Butt - tone hole 4 distance from north	x		
Butt - tone hole 5 distance from north	x		
Butt - tone hole 6 distance from north	x		
Butt - tone hole Ab distance from north	x		
Butt - tone hole F distance from north	x		
Butt - tone hole F♯ distance from north	x		
Butt - tone hole E distance from north	x		
Long joint - tone hole D distance from north	x		
Long joint- tone hole E ♭ distance from north	x		
Long joint - tone hole C distance from north	x		
Long joint - hole B ♭ distance from north	x		
Bell - vent hole distance from north	x		