

## Multiphonics for Modern German-System Bassoon Spectrum Analysis and Tablature Notation


Frequencies have been forced into a 1/4 tone equal tuning system when in reality they can lie anywhere/everywhere on the spectrum —sometimes fitting a perfect 1/8 tone equal scale-- so pitches must be considered approximate.


The lowest registered frequency is noted with a red note - this frequency is often inaudible (there can be lower frequencies than these, but of too slight a db level and too broad a range to specify). The rest of the black notes are select frequencies that can actually be heard in varying degrees.


Many of the lower and mid register multiphonics have strong resulting tones or bell-tones whose frequencies do not register with spectrum analysis. The most present ones are designated by blue notes and their true octave can shift or be a little ambiguous.

By their very nature beating chord multiphonics are made up of competing or intermittent frequencies that are often concentrated in multiple clusters. Where possible frequencies are charted as they are for consonant chords but in addition: grey notes designate the low end of a 1/4 tone fluctuating/multiple frequency; blank notes designate the mid point of 1/4 tone fluctuating/multiple frequency; heavy-outlined notes designate clear intermittent frequencies.

Multiphonic fingerings have been notated in the following manner:

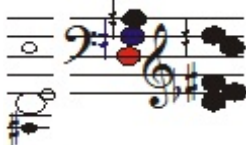
The large note  - - designates the base fingering (to be read in bass clef) which is used as foundation for the multiphonic.

The small shaded note -  - corresponds to the tone-hole or key that is to be added to the base fingering.

The small empty note -  - corresponds to the tone-hole or key that is to be removed from the base fingering.

Register and wing keys are noted by their key name above the staff (c#, a, c & d) as are trill keys (C#<sup>tr</sup>, Eb<sup>tr</sup>).

Many of these multiphonics are closely related to tenor register notes but first register fingerings are maintained as reference in order to avoid any confusion caused by the plethora of alternate fingerings that exist in upper registers.

In this Example: 

Low F is fingered; low C# added while E tone-hole and G key removed.

Frequencies present:

The red D in the bass clef is the lowest registered frequency.

The blue F-1/4 tone sharp, is an audible 'bell' or resulting tone not present in analysis.

Other frequencies include in varying degree of audibility;

A-1/4 tone sharp in bass staff;

D, E & F# above middle C; C, D-1/4 tone sharp in the following octave.

Tablature of Multiphonic Fingerings for German System Bassoon along with Chord Analysis (P2)

This image displays a grid of 60 musical staves, arranged in 10 rows and 6 columns. Each staff represents a specific multiphonic fingering for the German System Bassoon, accompanied by a chord analysis. The notation includes notes on a five-line staff, with some notes highlighted in red and blue to indicate fingerings. Above each staff, there are letters (a, b, c) and symbols (circles with dots) representing the chord analysis. The staves are organized into groups, with some groups having a common letter above them (e.g., 'a' above the 9th row, 'b' above the 10th row, 'c' above the 11th row).



