

F Overtone Series

Natural tones on F Tuba, open, and on F Horn, open.



Valve instrument fingerings = trombone positions:
0 = 1st 2 = 2nd 1 = 3rd 12 = 4th 23 = 5th 13 = 6th 123 = 7th



1.4 Quartertones and Microtones

On trumpet, any note using the 1st and/or 3rd valve can be **lowered** a quarter or other microtone, by extending the valve slides, without compromising sound or tone production. Despite any theoretical or harmonic reasons that justify writing quartertones as any type of sharp notation, **all quartertones, whether accessed by extending a slide or manipulated by the lips, should be notated as lowered from the ½ step above.** While writing microtone scales, both directions can be written, based on the diagram below: *Cents relative to normal fingerings.*

French horn can always be lowered a quartertone by closing the hand in the bell but the sound becomes compromised. Because the horn (as long as it's a double horn) has both Bb and F overtone series, every note has an alternate fingering. Thus one "side" of the instrument can be tuned a quartertone flat thus allowing for a perfect quartertone scale without any compromise to the sound of the instrument.

Because of its slide, a trombone can adjust pitch to easily in both directions and thus can play all quarter and microtones without compromise to sound quality.