

# Overtones for Saxophone

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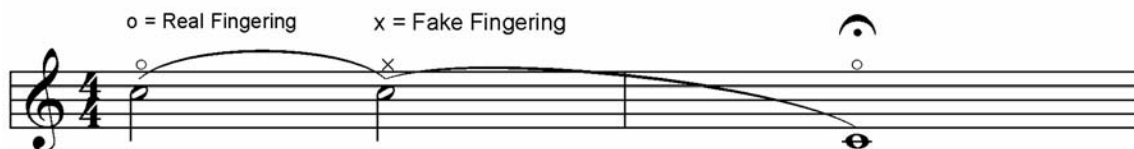
I'm sure that you are familiar with the word and the idea of the overtone. If you have any experience playing guitar you probably know that the "chime tone" that you can create by touching the 12<sup>th</sup> fret and plucking the string is an overtone. Electric bass players the world over use overtone techniques that were developed by Jaco Pastorius to expand the sound palette of that instrument.

To be official, the Dolmetsch Online Music Dictionary defines the word overtone as **a simple frequency component (or partial) of a complex tone which is an integer multiple of some given fundamental frequency**. Man, what a mouthful! Let's break this definition down. "**A simple frequency component (or partial) of a complex tone**" means that you won't hear the overtone by itself under normal listening conditions. You will hear the "complex tone" - the different pitches of the clarinet, the guitar, the trumpet – but not the overtone. Or do you?

The clarinet, guitar, or trumpet – any musical instrument – produces a complex tone, or waveform, composed of a fundamental tone and various overtones. The pitch of the complex tone is determined by the fundamental tone. The timbre is determined by which overtones are more prominent in the sound spectrum. For example, the clarinet has a cylindrical bore which allows the odd numbered harmonics to be more prominent. On the other hand, the saxophone has a conical bore, allowing the even numbered harmonics to be stronger. Thus, the prominence of different overtones makes a clarinet sound like a clarinet and a saxophone sound like a saxophone. You do hear the overtones, not as distinctly audible tones but in the timbre of the instrument.

"**which is an integer multiple of some given fundamental frequency**" means that the frequency of each overtone is a multiple of the frequency of the fundamental. The first overtone is an octave above the fundamental; its frequency is twice that of the fundamental tone. The second overtone is an octave and a fifth above the fundamental; its frequency is three times the fundamental frequency. And on through the overtone series.

How does the overtone series apply to the saxophone? Learning to play overtones on your horn will help to improve your sound and your pitch sense because you will have to become more aware of what's happening in your throat. Opening the throat is necessary for any wind player, saxophonists included. Take a look at this exercise below and try it out on your horn.



Play the first C (the real fingering) as you normally would with your second finger left hand. Start that note with your tongue. Play the second C (the fake fingering) by fingering low C but playing the same pitch as the first note. Slur into that fake note. Then allow the pitch of the fake note to drop down to an actual low C, again without tonguing.

Three things to watch out for as you do this exercise. One is keeping the middle note in tune with the first note. Depending on which horn you do this with, and even which brand of horn you own, you may find that the middle note is out of tune with the first note. It is usually sharp. You need to adjust the pitch of the middle note with your throat to bring it in tune with the first note. This is very important, as opening the throat is one of the goals of the exercise.

Secondly, some of you may find the octave drop a little difficult. If so do the following: thrust your lower jaw out just a bit to assist in the drop and to keep it smooth. If you hear the sound spreading, or you feel that you are putting your embouchure or throat muscles through a bunch of contortions be patient and be persistent. You will eventually improve to the point that you won't need to do anything with your embouchure. All of the action will happen in your throat.

Thirdly, you won't be able to do this exercise by blowing harder, forcing the fake note to come out, or honking out the low note. Don't think of making it happen; think of allowing it to happen. Think of allowing the fake note to sound and allowing the fake note to drop to the low note. I usually try to turn off my brain when I do this exercise and just get inside the sound as much as possible.

As you improve you should notice that your overall pitch will flatten so that you have to push in farther to tune up. This is a good thing. As Dave Liebman writes on page 18 of his book *Developing A Personal Saxophone Sound*, pushing the mouthpiece further in on the neck cork aligns "as closely as possible the natural conical and cylindrical shapes of the neck and mouthpiece, respectively. With the correct shapes overlapping as much as possible, the air stream enters the horn efficiently". Now, don't get me wrong here. I'm not saying that you should jam the mouthpiece all the way up the neck cork regardless of pitch. Not at all. You should always play in tune. Mastering this exercise will allow you to play in tune with the mouthpiece pushed in further, making the air flow more efficiently.

Below is one version of an overtone exercise through the second overtone. Spend some time with this and make it part of your warm-up routine.

## Saxophone Overtone Exercise

Play the 1st note, with the real fingering. In the same breath play the 2nd note by fingering the 3rd note, but playing the same pitch as the 2nd note. Then, still in the same breath, drop down to the 3rd note. Tongue only the first note. If you have difficulty dropping down to the 3rd note slightly thrust out your lower jaw.

### 1st Overtone

o = Real Fingering  
Real Note

x = Fake Fingering  
The Overtone

The 1st Overtone exercise consists of seven measures, numbered 1 through 7. Each measure is written on a single staff in treble clef with a 4/4 time signature. Measure 1 starts with a quarter note G2 (marked with 'o'), followed by a quarter note G3 (marked with 'x'), and ends with a quarter note G2 (marked with 'o'). Measures 2 through 7 follow a similar pattern, with the first note being a real note (marked 'o') and the second note being a fake fingering (marked 'x') of the same pitch as the first note. The notes are: 2: A2, 3: B2, 4: C3, 5: D3, 6: E3, 7: F3. Each measure is connected to the next by a slur, and a breath mark is placed above the first note of each measure.

### 2nd Overtone

Don't use the octave key to play the first note of the 2nd Overtone series. As in the 1st Overtone series, the 2nd note is fingered the same as the 3rd note.

The 2nd Overtone exercise consists of seven measures, numbered 9 through 15. Each measure is written on a single staff in treble clef with a 4/4 time signature. Measure 9 starts with a quarter note G2 (marked with 'o'), followed by a quarter note G3 (marked with 'x'), and ends with a quarter note G2 (marked with 'o'). Measures 10 through 15 follow a similar pattern, with the first note being a real note (marked 'o') and the second note being a fake fingering (marked 'x') of the same pitch as the first note. The notes are: 10: A2, 11: B2, 12: C3, 13: D3, 14: E3, 15: F3. Each measure is connected to the next by a slur, and a breath mark is placed above the first note of each measure.

Use the low C# fingering for real note G#,  
as the low C# key will open the G# key.

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 19  
 21  
 23  
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Check out these sources for more information on overtones and the saxophone:

*Developing A Personal Saxophone Sound*, by David Liebman, Dorn Publications, Inc.  
*Top-Tones for the Saxophone*, by Sigurd M. Rascher, Carl Fischer  
*The Master Speaks: Joe Allard's Saxophone and Clarinet Principles*, by I. Jay Weinstein, RIA Concepts