

The Anatomy of a Mouthpiece

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Saxophone and clarinet mouthpieces are incredibly complicated. The different design features can be overwhelming if you are not well-versed in the terminology and how tiny differences in measurements will affect the sound. This article is not intended to be a complete and exhaustive description of every nook and cranny of a mouthpiece but an overview of the most essential measurements and how they will affect playability. On page four you will find diagrams showing the different parts being discussed.

- **Tip Opening** – This is probably the most significant measurement for a player to be mindful of when selecting a mouthpiece. The tip opening is the distance from the tip of the reed to the tip of the mouthpiece. Smaller tip openings are easier to control than larger ones. You will need a softer reed with a larger tip opening as the reed has further to move when vibrating against the mouthpiece. Jazz mouthpieces tend to have larger tips than classical mouthpieces which is why jazz players generally play softer reeds. For example, my classical alto mouthpiece (D’Addario Reserve 155) has a 1.5 mm tip and my jazz alto mouthpiece (D’Addario Select Jazz 7) has a 2.1 mm tip. I use a D’Addario Reserve 3 on my classical mouthpiece and a Select Jazz 2 Hard on my jazz mouthpiece.
- **Facing Curve** – There are two important aspects of the facing curve: the shape of the curve and the length of the curve. When we talk about the length of the curve, we are referring to the length from the tip of the mouthpiece to where the reed meets the mouthpiece, also known as the fulcrum point or take-off point. However, calling it the length of the facing curve is not the most accurate as we are actually referring to this distance as a straight line going along the reed. Check the diagram for clarity. Look at the long blue line, the length of the curve is the length of that line between the two short blue lines running perpendicular. The length of the facing curve will impact the strength of the reed required. Mouthpieces with longer facings require harder reeds. However, the facing curve length has significantly less impact on reed strength than the tip

opening. The actual shape of the curve is a far more complicated set of measurements. Every manufacturer and refacer has their own idea on the perfect geometry of this curve.

- Rails – The rails are very closely tied to the facing curve. These rails need to be perfectly even, the slightest variance in the rails will result in most reeds not working with the mouthpiece. This could lead one to think that the reeds are bad, but in reality, the few reeds that WILL play with the mouthpiece are slightly defective and just happen to work with the defect in the mouthpiece. The thickness of the rails is also extremely important to tone quality. The thicker the rails, the darker the sound. One of the great myths in the saxophone world is that metal mouthpieces play bright because of the material. Recent research shows that there is almost no difference in tone quality between metal and hard rubber! However, there are several reasons to manufacture a mouthpiece from metal. One of the draws is that you can make the rails thin. Equally thin rails on a rubber mouthpiece would be brittle and easily break. Mouthpieces that have thin rails will play with a very bright tone color.
- The Fulcrum Point/Take Off Point – The fulcrum point/take-off point was already discussed in regard to the facing curve, but it also has an effect pedagogically. The fulcrum point is where we should applying pressure on the reed with your bottom teeth through the lip. To find the fulcrum point, take a thin piece of paper with and slide it between the reed and mouthpiece. Be sure not to force the paper which will push the reed away from the mouthpiece, just let it fall into place. This can also inform you if your rails are uneven! If the paper falls slightly diagonally, your rails are uneven and will affect the mouthpiece as described in the Rails section. Without training in mouthpiece refacing you will likely not be able to even out the rails on your own. If the mouthpiece is professional quality, it is likely worth the money to have it fixed!
- Tip Rail – The tip rail is the ridge right at the tip opening. The variation in tip rails will be in how thick they are. Thicker tip rails will darken the tone color. I theorize, without ANY acoustical evidence, that thicker tip rails can also make the mouthpiece more sensitive to very small reed defects.
- Baffle – The baffle falls right behind the tip rail and can come in different heights. A really high baffle (the mouthpiece comes closer to the reed) will have a much brighter sound. Higher baffles are another signature of jazz mouthpieces.
- Table – The table is where the reed seals to the mouthpiece. A firm seal is absolutely critical to ensure proper response when playing. Traditionally, mouthpieces have a perfectly flat table to seal to the reed and this how is nearly every mouthpiece is currently manufactured. I was recently shown the advantages of having a slight concavity to the table of the mouthpiece. This concavity is small and can only be seen by holding the mouthpiece on a flat surface up to a light. By having this slight indentation on the table, the reed pushes in when strapped down with a ligature. I find that the result is a slightly improved response and the mouthpiece is not as sensitive to small discrepancies in reeds. You can easily have this done to your mouthpiece through a refacer familiar with the process, contact me if you want more information! On the flip-side, even the slightest convexity to a mouthpiece table can be disastrous. This is something that can be easily fixed by a refacer.



- Chamber – The chamber is the inner core of the mouthpiece. There are two factors to take into account when looking at mouthpiece chambers: shape and size. Chambers can be round, square, horse-shoe, or oval. The effect of each shape on the mouthpiece is somewhat debated in the saxophone community. D’Addario recently created an oval-shaped chamber in their Reserve Mouthpiece, and I find the benefits to be quite impressive. I believe this to be a key factor in the excellent intonation of the mouthpiece. The original mouthpieces designed by Adolf Sax had large chambers, but manufacturers have experimented with different sizes over the past 60 years or so. A large chamber will produce a big, thick, wide sound. When you start to narrow it, the sound will become more compact and brighter. I generally prefer medium chambers on my mouthpieces.
- Shank – The shanks sole purpose is to hold the mouthpiece on the neck. We never really consider a shank unless there is a problem. If a mouthpiece has a small shank it may be very difficult to place it on the neck without shredding the cork. If you happen to have a shank that is too big for your neck, you may need to have it recorked. The issue is if you have two primary mouthpieces where one has a large shank and one has a tight shank. When using the mouthpiece with the large shank, you can use some Teflon tape to add a little more diameter to your cork.

