

# BIGMOUTH piece • for alto clarinet

~ Big easy sound with a tenor sax reed ~

Intro & Instructions V.4 April 2024

Alto clarinet can be stuffy and stubborn – and the reason is in plain sight. The reed, standardized over 100 years ago, is too short. I developed **BIGmouth piece** to take a *tenor sax* reed instead of the normal alto reed. Here's the logic – assume the reed length for the Bb (soprano) clarinet is ideal. The alto clarinet is 34% longer, acoustically. Therefore, its reed should be about that much longer. But it is only 12% longer. The tenor sax reed is closer – it's 40% longer (we're comparing the *vibrating* portions of the reeds). The alto clarinet has about the same tonal range as a tenor sax. Now, this starts to make sense. The difference is astonishing. When I revert to a standard MP, it's like there's cotton in it.

The photo below shows before and after: the tenor MP, and alto cl. modification. I cut it on a lathe to form the tenon. (Gratitude to Eugene Kirton for the origin of this crazy idea.) My first attempt used a no-name hand-me-down MP. By luck, it was a good choice. I found the same MP in current production so I could continue evolving the conversion.

**PHOTO** BIGmouth – before and after



The original MP bore is shaped to fit over a sax neck. It's not acoustically correct for clarinet. But by coincidence, it isn't far off. I developed ways to re-shape the bore, closer to a normal clarinet profile.

I did a run of experiments on eight MPs to fine-tune the design so the intonation is equivalent to a standard alto MP.

## The tone

The bottom is like dark chocolate, melting its way up the chalumeau, then crossing the break with a gutsy undertone like a baritone sax. Clarion is a clear and smooth into altissimo – at least to G#. It's essentially a “baby bass” clarinet in tone and overall behavior – with no fuzzy tone anywhere.

## A statement from my first product tester

*“I LOVE THIS MOUTHPIECE setup! You have done a remarkable thing here, in that you've taken a rather boring horn and given it a sonorous, gutsy personality. The alto has never been regarded as anything but a filler horn, and now it can take center stage. It has very fat sound both in the chalumeau and the clarion, and MUCH more projection. I do not foresee ever going back to a traditional MP.”* — Jim D. “Windsong” on ClarinetPages.info April, 2024



### **BIGmouth KIT – Here's what's included**

BIGmouth piece  
 Fibracell® 2.5 synthetic tenor sax reed  
 Flexible ligature  
 MP cap and tooth patch  
 Brass insert, for Large Bore version (see p.2)

**Fibracell reed** is a reported favorite for alto cl. It's the most natural-feeling synthetic. I include one to assure you get the intended result right out of the box. If the edges start to irritate your lip, round them *slightly* with fine sandpaper – but don't approach the tip – leave at least 8mm (1/4") untouched from the tip. Fibracell is widely available. Fast and lowest prices – Kessler & Sons or Weiner Music.

**Flexible ligature** – Rising over the break (with any MP) there is a spike of back pressure. A flexible lig absorbs the pulse and helps keep the sound continuous. Also helps articulation. I include this particular lig because it costs only \$10 and it's the best I've tried at any price. It's easy to handle, and gives a secure grip with light tension. I mark the MP to show the position for best response. Medium screw tension is best.

### **TWO VERSIONS of BIGmouth piece for TWO VERSIONS of alto clarinet**

There are two common designs for the alto clarinet, "small bore" and "large bore" (*bore* is inside diameter). The tone holes and spacing are also differ. There are two versions of BIGmouth to match the characteristics of the two types of alto.

LARGE BORE altos include: LeBlanc, Noblet, Vito

SMALL BORE altos include: Selmer USA and Paris, Buffet, Bundy

**To determine which alto version you have**, find a US dime (it's 17.8mm diameter).

- If a dime falls through the neck, order a **LARGE BORE BIGmouth** (18mm)
- If a dime will NOT fit in the neck, order a **SMALL BORE BIGmouth** (17mm)

Please do the dime test to be certain! The wrong version will be disappointing.

**Explanation** BIGmouth passes more air than a standard MP. The large bore alto readily accepts it. The small bore alto resists. It wants to be spoon-fed so it doesn't gag. This is why there are two versions of BIGmouth. A large-bore alto welcomes a wide-open MP to match the open nature of horn. I use a classical "dark-tone" tenor MP with a smooth round interior. The Small Bore version works more like a nozzle, to focus the energy.

Terminology: Musicians refer to *resistance*, but the engineering term is *impedance*. It part of a the universal concept that applies whenever power is transferred from one place to another. Power transfer is optimized by *matching the impedance* between components. It's like selecting the correct gear on a vehicle, or the right transformer in an electrical or audio system. Or – adjusting water flow to match the absorption of your garden soil. Give it what it wants!

The SMALL BORE instrument has higher impedance. It is matched best to a smaller-chamber MP with a baffle. The baffle looks like the top of an airplane wing. It speeds the exit of air (and energy) away from the reed, so it can vibrate more freely. The two MP versions differ internally, but, paired with the right horn, they feel similar.

### QUALITY

The starting point is one of two high-precision US-made plastic MPs. The bore is modified for specific and overall intonation, accurate 12<sup>ths</sup>, etc. The mods are different for each version. I hand-finish the reed table and facing if they need it, to achieve a tight seal (this is critical for the low clarion and for squeak resistance). I test every piece to be sure it's got the BIGmouth sound and feel.

I had to question the **facing curve** (where the reed lands) because it was intended for sax, not clarinet. So I compared the BIGmouth curves to a typical bass cl. MP. They are practically identical; both are designed for tenor sax reeds. Another engineering term: *Voilà!*

### NECK INSERT

~~ for the **LARGE BORE** version only ~~

A brass neck insert creates continuity between the MP and the neck. It tunes the throat notes and equalizes the one across the break. It also strengthens the Bb AND tunes the altissimo. It slices. It dices. And it won't interfere with the use of a standard MP.



### INSTALLING THE INSERT

You can test the MP without it, first. Then, dry the neck and clean the entrance with alcohol. Apply shellac glue to keep it in place. The wet glue also acts as a lubricant that makes it much easier to insert it and turn it into position.

Use plenty of glue to seal it in – it's easy to clean later. Insert it with a finger. Place the gap toward the *front* of the horn. Leave the brass protruding a bit. Then, insert the MP for a moment to push it into perfect position.

Remove excess glue with alcohol on a cloth, and clean your finger. Let it dry for a few hours. If you're in a hurry, warm the neck with a flame or hair dryer.

**REMOVING THE INSERT** Find a hook tool (or a piece of wire like a paper clip, and use pliers to make a short 90° bend). Warm the neck below the socket with a small flame to melt the glue. Pull out the insert with the hook tool. Swab out remaining glue with alcohol. This will restore the original condition of the neck. Shellac glue is traditionally used on woodwinds, for parts that may need removal. Any technician will think its probably shellac, and will know what to do.

### **TUNING your “NEW INSTRUMENT”**

With a new MP and practically a new instrument, you may not have your embouchure dialed in – so where do you start with tuning? Educators advise: “Tune the instrument to itself”. This means that the top of the horn is in tune with the bottom. The neck pullout affects the top of the horn more than the bottom, so there is, in theory, *one* ideal set point. Here's how to find that ideal.

Set your reed carefully, as always. Apply a firm and steady *clarinet* embouchure to create a strong and easy tone. If you are sharp or flat – *ignore it for now*. Play a low clarion note and watch your tuner. Remember the deviation. Now play a high chalumeau note. *Tune the neck for the same deviation*.

Example: If clarion low B is 15 cents flat, tune the neck so your chalumeau top A and Bb are also 15 cents flat.

**Mark this position** for the next time you assemble. For a metal tenon, I use nail polish and/or Sharpie pen. For a corked tenon, use another visual clue.

**NEXT, correct the overall pitch.** Play around with mouth insertion, lip pressure, muscle squeeze and breath, until the entire instrument comes into tune. When you get to pitch, the overtones will harmonize and induce joy to the ear. NOW, your embouchure can stay nearly constant as you play.

**Future adjustment:** Your mouth is a part of the overall air column. It affects the tuning. A change of reed strength may also change the tuning. So re-test your pull-out occasionally, but remember always: *Tune for continuity across the break*. You can apply this method to all your woodwinds. If you do, you will have simpler continuity when switching between instruments.

**“BIGmouth piece” ~ it's too ridiculous for a trademark™**

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