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Mouthpieces

Introduction

The most famous models of mouthpieces that we have developed are without doubt the trumpet-series G, which has become a standard model within Viennese orchestras. Many top musicians influenced the style of these mouthpieces, before models like the G1, G2, a.s.o. finally got their typical shape. Consequently this raises the question:

Is it still possible to improve a mouthpiece?

In my opinion there is no good or bad mouthpiece, but only one that fits and one that does not.
Apart from extremely cheap products which in most cases are produced to complete the package of a new instrument, mouthpieces are generally developed together with competent musicians, who can then realise their definition of a perfect sound.

The important thing, however, is how precise can these designs be practically realised and then produced in the long run.
Every country has its language and every region has its characteristics, which reflect the type of people living in the respective country. The same is true for instruments and mouthpieces, which characteristics reflect their mentality.

In this context the Wiener Klangstil is a term which has brought fame and admiration for our orchestras and their musicians in all parts of the world.
I am proud to contribute with my mouthpieces to preserve and represent this Wiener Klangstil. In the future it will be also important to me to not only participate in the development of this style but also to hand it down.

The various and ever increasing requirements to the musicians and the strive after more differentiated styles cannot and must not be ignored by responsible instrument-makers and producers of mouthpieces. This is the reason why I am trying to assist the musician in overcoming certain difficulties by constantly improving my products.

The musician should be in the position to chose the mouthpiece that offers the artist the highest possible flexibility to get the ideal tone colour, style and comfort.
I am glad that I was given the opportunity to make a substantial contribution to reach these aims by developing mouthpieces consisting of several parts.

A great number of mouthpieces have been tested within my research project "**Wiener Mundstück**" (Viennese Mouthpiece), which has led to new forms that can now be found in the module system and can be combined with traditional products. According to famous musicians the standard series G has been improved once again. New products make the programme complete and keep it competitive for even higher standards in the future.

General Information

Our mouthpieces are made of high-quality solid brass which are shaped by a turning-lathe in our workshop. Of course other materials such as polymer wood, acrylic glass, synthetic materials and even titanium are used as well.
The best mouthpiece would be the one that is made of metal, which creates heat dissipation. Consequently the musician's lips are less likely to swell, due to heat accumulation and higher supply of blood.

However, one in ten persons suffers from metal allergy, the symptoms are rashes, blistering and herpes. This allergy is triggered by a certain amount of zinc contained in the brass or by patina on silver surfaces. In these cases the ideal solution are mouthpieces which are made of alternative materials or a 24 carat gold-plating.

Mouthpieces are instruments which demand the same hygienic standards like our teeth, and I really want to underline the importance of hygienic care of mouthpieces.

Black colouring of a silver mouthpiece is caused by aggressive saliva or intensive perspiration of the hands. Removing this silver patina is very important, as any sort of patina contains toxic agents. An inner side of a mouthpiece that has not been cleaned properly (bacteria) will form the breeding ground for diseases of the pharynx. I would not recommend using gold-plated mouthpieces, as they are very often underlaid with nickel to provide a lasting priming for the thin gold layer. This technique might be the right one in order to galvanise, however, it is not suitable at all for instrument-making purposes and in particular not for the production of mouthpieces. As soon as the thin gold-layer has disappeared (as a consequence of regular use and inappropriate keeping of the mouthpiece), the musician's lips are confronted with a layer of nickel which can cause metal allergy (nickel allergy) sooner than any other material. Nickel can easily cause dermatological reactions and is a hard material which makes it very difficult to change the shape of the rim and the cup.
Our mouthpieces are silvered and can be gold-plated on request. It is normal that this layer will disappear as a consequence of frequent use. However, as soon as the yellowish colour of the brass becomes visible I would recommend a service in order to clean the mouthpiece and silver it again.

... measurement and measures

To measure mouthpieces is everything but easy for both musician and instrument-maker. Only today's computer technology makes it possible to measure mouthpieces precisely using fully automatic measuring methods. However, this topic is too technical to be taken into consideration at this place and not suitable for day to day application. Length and outside diameter can easily be measured with traditional instruments such as micrometric callipers and slide callipers allowing measurement within the range of a hundredth-millimetre.

The diameter of a mouthpiece can be determined by a bore shank (the non-cutting part of the driller), another measuring device for these measurements that is more precise but hardly available would be the alignment pin (measuring pattern). They are precisely grinded, tempered steel cylinders with standardised diameter.

The problems start with the measurement of the cup width (or the width of the inner rim) as there are no parallel areas or cylinders which could be measured precisely. Every mouthpiece has a huge number of different radii which makes it impossible to determine the diameter. Some brochures of producers offer measures of their cups, but no information about which spot of the mouthpiece the producer chose for measuring. Unfortunately in this field there are no international standards yet that could be used by musicians to determine the size of different mouthpieces.

One day I decided to check the measurement data of a renowned producer and found out that the measures of the various models had been taken at different spots, just as I had expected. This indicated to me that they might just have been estimated (other reasons for enormous deviations are inaccurate production and sloppy final production).
Consequently these data are actually useless for the musician's purpose as they are unprecise which means that they can never be compared with those of other producers. So the best method to "measure" the diameter of a cup is the one with the coin: the musician chooses a coin, in the U.S. it could be the one cent coin, in the UK one penny, etc. The important thing is not the currency, but thickness and diameter. Next the musician puts the coin carefully in the cup. Depending on the diameter of the respective cup the coin will then stop at a certain point. With this method you are in the position to compare different cups.

It would not be correct to regard the rim of a mouthpiece wide, because of an outside diameter (of the rim) of e.g. 29.0 mm. The all important thing is the proportion of the inner and the outer diameter. Through the application of this calculation, the musician will receive a figure which will determine, if the rim is narrow or wide. (rim G: 0.608).

Another characteristic which appears automatically in course of time, is that the rim gets scratches at its highest point ("abrasion ring"), due to improper handling. Musicians who put their mouthpieces regularly on a rough surface (which they should never do) will make the experience that the originally shiny and polished rim will soon be full of scratches. The top of the rim becomes lustreless with ring-shaped scratches. If you measure the diameters of such mouthpieces and compare them with each other you will see the difference.
In this area most of the pressure is put on the musician's lips. This ring should be within the inner half of the rim. The nearer the ring is to the centre of the mouthpiece, the sharper is the feeling on the lips (exact fitting). The rim is such a complex part of the mouthpiece that we can give no further information about the characteristics of the rim at this place. The most important aspect is the comfort of the musician. However, as soon as problems referring to endurance, pitch level and tone colour appear, will become necessary to check the rim.

... focus of attention

is without doubt the cup of a mouthpiece, which seems to be the solution to all problems. It is the basis of all harmonious and all shrill sounds, it forms the sound, shapes the column of air and gives the lips too little or too much space. And it can be too deep or just too shallow. The cup does fit to pump valves, but not to rotary valves. If I, as a producer, was asked how I would describe the ideal cup, my answer would then be: it has to be the one that is perfectly adapted to the respective musician, his/her music and his/her instrument. Although a lot of research work on brass instruments and mouthpieces has been done, there are no results yet which help the producers with concrete producing processes. Gifted instrument-makers designed empirically mouthpieces working together with brass musicians who tested those mouthpieces that had been adopted to their demands referring to sound. Countless models were designed and immediately dropped. Many producers have created an incredible number of different models. Who should be able to know about the advantages and disadvantages of the various products and make recommendations?

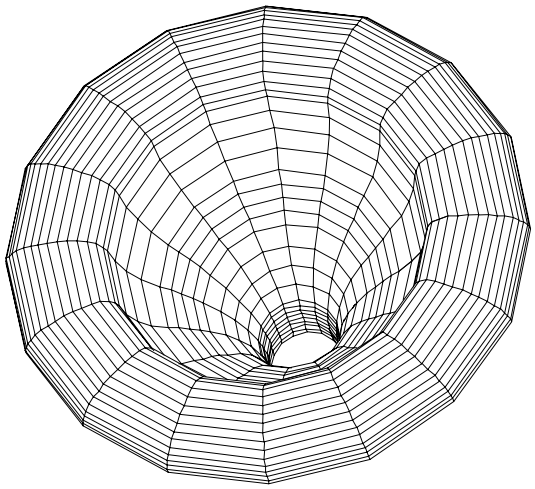
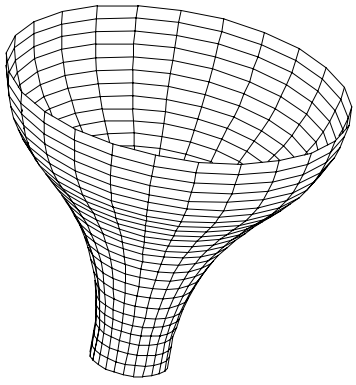


Figure 1: model of the cup of mouthpiece G2

My standard cups are the models G1 to G4. They have been handed down to me by my father who concentrated on producing top-quality mouthpieces. One of the biggest problems of producers of mouthpieces has been to constantly produce mouthpieces that are all identical in shape. Handmade mouthpieces had ever been individual pieces and prototypes. The system of sound creation is so complex that even the smallest differences in producing the mouthpiece will change the sound picture or the supporting function of the mouthpiece significantly. In order to avoid these negative effects, we use sophisticated state-of-the-art production machines and sometimes even diamond tools. They enable us to reproduce mouthpieces with the repeating accuracy within the range of micro millimetres. Due to the following working processes including electro-plating this high repeating accuracy will marginally get worse.

You might ask the question now, why I have not made any concrete comments on the different shapes of cups. My answer would then be that I do not want to provide you with banalities or to copy what other authors published. This topic is far too delicate to describe it only by saying that a deep module cup produces a beautiful big tone whereas a shallow cup will be the best cup for producing high tones. I would give the V-shaped cup preference over the C-shaped cup. The latter may be more suitable for piston systems (more resistance caused by accumulation), referring to the quality of the sound, however, the V-shaped module cup is without doubt the best of the two cups (Wiener Stil).



Fugure 2: cup of G2

And what about the bore? Is a 3.8 mm bore better than a 3.6 mm? This is a difficult question which cannot be answered in general.

A high-positioned *Seele* (see Fig. 3) provides you with different characteristics than a deep one. The length of the *Seele* itself is also very important. Any change of one of the various sections of the cup will change both sound and ease of play. The back bore plays a major role in creating effective models.

Each of my new models has to undergo our comprehensive testing programme before it will become one of the standard models. Countless combinations are tried out before we make a recommendation. The final decision lies on the critical wind player who will soon find his/her favourite model by testing it. Even the biggest assortment of products will not satisfy musicians, if they have no idea what type of model they shall be looking for, and even the most flowery description can never be a substitute for testing a mouthpiece.