

# All About Headjoints

By Patricia George

Flutists obtain better results when they understand the various headjoint styles available and how they are constructed. The hand work on each headjoint results in variations even within the same model. These differences greatly affect tone and responsiveness.

## The Tube

Headjoint tubes are made of various materials: silver, gold, platinum, wood, and other materials. Tube thicknesses vary from .012 (called thin-wall) to .018 (heavy-wall), but the most common are .015-.016. Thin-walls tend to respond more easily than heavy-wall headjoints, which usually have a darker tone color. Tubes may be extruded or seamless, and some are made from a metal sheet that is rolled and seamed.

While the shape of a headjoint tube starts as a straight cylinder at the open end of the tube, it becomes slightly smaller toward the cork end, which is something to remember when having the cork replaced. Good repair people match the taper of the cork to the taper of the tube for a good seal.

Headjoints also vary in length. The scoring, or non-shiny part near the open end of the tube, should match the spot where the headjoint is when pushed all the way into the flute body. To check the scoring on your headjoint, push the head into the body as far as it will go and mark where the two tubes join with a sharpened pencil. Most flutes play better in tune with the headjoint pulled out a bit, and the pencil mark will show just how much. The distance between the center of the embouchure hole and the upper C key on the flute body should be about 9¼".

## The Riser or Chimney

A riser connects the embouchure plate to the tube. Some believe that the harder the riser material (from soft

to hard: silver, gold, platinum, titanium) the easier it is for the craftsman to cut the blowing edge. Riser height can also vary from .185" to .215". Lower risers are more responsive and easier to play, while higher risers produce a darker sound, although they require more energy to play. Joseph Mariano preferred headjoints with high-walls.



## Embouchure or Lip Plates

Embouchure plates, which come in various shapes, are soldered onto the riser and may or may not be the same metal as the riser. The part of the lip plate that rests on the chin and lower lip is referred to as the backside, and it should fit the chin comfortably. This allows the flutist to change colors more easily. For an extra fee, some manufacturers will also engrave the backside of the plate, which prevents the flute from slipping around on the chin during hot, muggy weather as shown in the picture above.

The outside edge of the embouchure plate is the most important, because it is where the air stream divides to produce the sound. Holding the headjoint perpendicular to your body, turn it over so the embouchure hole faces the floor. This position allows you to see the distance between the outside edge of the embouchure plate on the left side of the tube and the tube itself, which provides a clue about how a particular headjoint will perform. The more space, the more beautiful the tone; the less space, the quicker the response. As both of these elements are necessary, a compromise between

beauty and responsiveness is the goal. Since the 1990s most flute makers have squared-off the outside of the embouchure plate to increase the response. Some have even removed portions of the plate.

## The Embouchure Hole

The shape of the hole affects the tone quality. Squared-off embouchure holes (German) are generally louder than oval (French) ones. However, oval holes produce subtle colors and varied dynamics within a narrow range. The hole and riser may have some overcutting and undercutting, which is done by hand with a surgeon's scalpel. In *The Rough Guide to Flute & Piccolo – The Essential Tipbook*, Hugo Pinksterboer explains further. "On many flutes you will notice that the left and right edges of the mouth hole are slightly slanted. This is called an 'overcut' mouth hole. A chimney or riser, which is slanted at the bottom is 'undercut.' How much metal has been cut away, how slanted the edge is, and how concave or convex the edge is, are all factors which influence the way a flute sounds and plays."

Headjoint makers may even add wings or ridges on the sides of the hole to direct the air, an option that works well for flutists with centered embouchures. Those who play through the left side of their lips usually have more success with traditional headjoints.

## The Stopper and Crown

At the closed end of the headjoint is a stopper and crown that seal the tube. The stem of the stopper is usually silver-plated, although heavier brass stems are sometimes used. The cork is glued to the stopper. Many craftsmen drip candle wax onto the cork and slightly buff it; then they insert the cork into the headjoint and seal it in place with more wax. I prefer an unsealed cork, so I can move and adjust it easily. Corks that are too tight





The closed end of the headjoint has a crown and stopper that seal the tube.

inside the tube can make a flute sound dull and flat. Sanding a bit off the cork also brings the pitch up.

A well-fitted stopper is always inserted from the tenon or flute body end of the headjoint and should drop half-way into the tube, landing so that it plugs about half of the embouchure hole. With a wooden cleaning rod or Bigio Crown and Stopper insertion tool, push the stopper in so that the line on the cleaning rod is in the middle of the embouchure hole or 17.3 mm from the stopper.

The screw at the end of the cork is called a crown. In the past flutists considered it purely a decorative device, although today many believe that the crown's weight, and perhaps even the material from which it is made, affects response and tone color. A physicist told me that the crown's weight beyond the end of the vibrating tube is what makes the difference.

Unscrew the crown to see whether it is hollow or solid inside. If the inside of the crown is hollow, try adding some plasticine or pieces of rice, lentils, or popcorn, one by one, to increase the weight. Test the sound after each addition. A crown that weighs .001 grams makes a noticeable difference for me.

British flute maker Robert Bigio has experimented with a crown and stopper held in place with a plastic O-ring, thus eliminating the cork. Although unsure why a corkless-stopper improves the sound, he reports that many of his customers hear and feel a difference. I have two of his stoppers, and the one I use in an older flute makes a noticeable sound difference.

### Find the Sweet Spot

To make a beautiful sound, players must find the sweet spot on the embouchure hole, the point at which the flute responds best. With a soda straw placed on the chin-side of the embouchure hole, blow through the straw while moving it from left to right and up and down. The sound will pop out of the instrument when you find the right spot. Then direct the air with your lips at that same spot and with

the same angle as with the straw.

### Headjoint Only Exercises

Try the following exercises for headjoint alone practice. Many are more difficult to do on just the headjoint than on the entire flute. Remember where the sweet spot is and direct the air to that location on the blowing edge. I like to teach these exercises in a darkened room, so a student's total attention can be focused on their sound.

#### Exercise 1

Lying on the floor with a small pillow under your head, take some deep breaths and note how the abdomen rises and falls. Still on the floor, blow across the embouchure hole without vibrato or tonguing. The pitch will be a slightly sharp A. Focus on the movement of the abdomen and repeat the exercise several times.

#### Exercise 2

While still on the floor, blow across the headjoint and slur up to the octave above. Enjoy the energy and strength of the breath as the pitch rises and notice how the embouchure changes. Gravity has a way of moving everything to the floor, so let the jaw hang. This will increase the size of the mouth cavity. Note the movement of the abdomen as you increase the air speed to reach the upper note. Repeat this several times, trying to remain relaxed and calm.

Now close the open end of the headjoint with the palm of the right hand and repeat the previous two exercises. Overblowing on a stopped headjoint produces three pitches, A, E an octave higher, and C# an octave above that. Work for these notes while allowing the body to respond to gravity.

### Articulation - Exercise 3

Start the tone with the tongue extended outside of the mouth. After approximately 20 articulations, repeat with the tongue touching the top lip. Then do some groups of single tonguing – three tongues and a rest with the tongue touching the top lip (*thi, thi, thi, rest*). The jaw should still be hang-

ing and relaxed with the movement as simple as possible. Repeat with the syllables *Ka, Hah* and *Thicka* on both the unstopped- and stopped-headjoint. After a bit, increase the number of tongued notes.

I do 64 tongued notes, rest a bit, and then repeat in order to build endurance. Each note should be staccato and equal in attack, duration, and release. Continue to observe how the abdomen moves in concert with the movement of air. *Thicka* is the syllable for double tonguing, and *thicka-thi* is for triple tonguing.

### The Vibrato - Exercise 4

On the lower of the two As on an unstopped-headjoint, play *hah, hah, hah, rest*, repeating many times. Notice how quiet the abdomen is. Now slur the *hahs* to form a vibrato chain. Increase the number of *hahs* until there are 16 counts of four vibratos. Repeat on the higher A.

### Tapers - Exercise 5

On low A, start *ff* and diminuendo to *f, mf, mp, p*, and *pp*, with two counts at each level. After reaching the *pp*, discontinue the vibrato and continue the taper down to a whistle tone. Notice how the abdomen assists with this exercise. Repeat several times. Now sit cross-legged and repeat the above exercises, trying to retain your concentration and relaxation.

### Quick Practice - Exercise 6

In a recent masterclass at the University of British Columbia, James Galway said that he practices octaves on the headjoint for a significant time each day for embouchure development. Those who lack unlimited time can practice several skills with one exercise, such as practicing counted vibrato while doing the octave exercise. Starting on low A, play two sets of two vibratos, slur up an octave, and play two more sets of two vibratos. Repeat 10 times. Repeat the exercise with two sets of three, four, five, and six vibratos. You will notice improved sound and embouchure strength within days.

Establish a routine by practicing the above exercises several times a week. They are particularly beneficial on days when you are tired. Deep breaths always help. These exercises can also provide peace and calm before a performance.

Patricia George is flute professor at Brigham Young University-Idaho and at Sewanee Summer Music Festival.