Cincinnati Fluteworks

FRAIZING AND UNDERCUTTING
HOW TO TEST A HEADJOINT

The technique of tone hole fraizing and headjoint undercutting may need a brief explanation. "Fraizing" was first written about in 1882 by Theobald Boehm in his Essay on the Flute and Flute-Playing. Flutemakers of his time used a tool called a "fraize" to round the bottom corners of the tone holes. Through the extensive research of Albert Cooper, headjoint undercutting has recently gained acclaim. Both processes, in oversimplified terms, remove rough edges and corners that disturb the vibration of the air column in the tube of the flute. These rough edges promote cracking intervals, and can cause a muffled low register and a stiff third octave.

It seems that recently more and more manufacturers advertise "undercut" headjoints. However, there is no one specific way to cut a head and there are no "perfect dimensions" that will prove "perfect" every time. The dimensions and undercut must be compatible with many other areas, such as the taper of the tube and the position of the embouchure hole, therefore no one can use the same specifications and produce two headjoints that play exactly alike. In the final analysis, only the individual performer or teacher can decide what plays well for him, and an embouchure hole can be cut in several different ways to suit the individual performer. Unfortunately, not many builders are flutists, and few flutists are skilled builders.

We feel we have addressed this problem very successfully at the Cincinnati Fluteworks. As professional flutists, we are aware of and sensitive to the needs of the individual performer. The Cincinnati Fluteworks was one of the first companies in the U.S. to develop and employ these techniques and we pride ourselves on our years of experience and expertise that have made us leaders in the field. In fact, we have so much confidence in the quality of our headjoints that we give you these guidelines to follow in selecting an instrument:

BEWARE OF THE POORLY CUT HEAD.

"Overcutting" is the most obvious reshaping of the embouchure hole. The lip plate is rounded at the sides (left and right) of the hole. The cutting ranges from a gentle roll to an exaggerated "scoop". A gross overcut enables you to play very loudly with ease. HOWEVER, it weakens all of the head's other characteristics - especially tonguing response and playing softly. Thus, the mere presence of overcutting does not indicate a good headjoint. Look on the inside of the embouchure hole, where the riser meets the tube, on the left (crown end) and right sides. It should be very smooth and polished with no gouges, scratches, or cutting marks. Now, play the head using the following tests to learn its characteristic traits:

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1) Play low C and, without changing fingering, "sneak" or overblow to the next octave C and back down again. Play low C#, etc. (this is also a good way to tell if the instrument is in tune with itself). This test will tell you if intervals between notes will crack. Any "bumps" between notes are very undesirable, and can render such pieces as Classical Symphony harder to play than they already are!

2) Play B^2 very loudly and as softly as possible. Are there any "whisper notes" or peripheral tones that appear when it is played loudly? Use the same test for notes up to G^3 and in the lower octave to F^1. Remember that playing fast passages tells you nothing about the sound of an instrument: Any instrument can be played fast! You will find that a head with an easy and full sounding lower octave might very well have a thin, brittle top octave. The reverse is also true, as a head cut to produce a fluid, singing top octave may sound choked and muffled in the lower register. The same rule applies to volume: if a head plays loudly very easily, it might not be possible to play it very softly. It is best to take into consideration the type of performance situation in which it will be played. Remember: if one extreme is accentuated, more will be taken away from the other extreme. Obviously, for the most versatile playing, a balance among all parameters is the ideal.

3) Try some quick tonguing passages, such as the excerpt from A Midsummer Night's Dream, in different ranges. Response should not be sluggish. If it is, a portion of one of the other parameters should be sacrificed.

These simple exercises will give you a good general idea of the strengths and weaknesses of any headjoint. Skillfull undercutting will improve any instrument. Balance and compromise among all possibilities make this ideal headjoint very rare indeed.

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