

When flutes began being built in America, pitch (at that time) was higher here than in Europe (which held A=435-438 as a standard). The Boston Symphony played much higher pitch. Haynes (still based in the Boston area), was the first large scale and most successful producer of flutes. Obviously, they produced flutes for the Boston Symphony and the students of the area, as well as producing flutes for other areas in the USA. To compensate for the overall flatness of the instruments, Haynes simply made the headjoint shorter.

The scale of the instrument is justified from the distance between the first open key and the last. By shortening the headjoint, Haynes effectively raised the pitch in the low register of the flute and made the upper register excruciatingly sharp. At the time when Japanese instrument manufacturers chose a flute to copy, the Haynes flute was at its peak. Sadly, Haynes flutes are probably the least valuable of all handmade flutes at this time. All the other flute companies rescaled based on A=440, 442, or 444 with the length of the head joint refigured, in the late '70s, early 80s. Each of those three pitch levels have completely different tone hole placements. These new scales are based on the work of Albert Cooper, hence the name Cooper Scale, which at this time is licensed only to Brannen Brothers Flutes and copied by many others.

<<MOST MANUFACTURED FLUTES ARE NOW USING A COOPER TYPE SCALE, BUT ARE PITCHED AT A442 OR HIGHER.>>

Most likely, you will find the pitch tendencies of all manufactured flutes (those under \$8,000) to be:

1. Flat in the low register
2. Flat, but pretty close to pitch in the middle register, barring C# which varies radically, even between the same make and model of flutes.
3. The bottom of the upper register is pretty ok, until you get to Eb. Then the instrument gets progressively sharp, especially E and F#, G#, but because of the harmonic series, you will find that the high Bb will usually be a little low.
4. When the flute is blown FFF by a student, it will probably be very sharp.
5. When the flute is blown pp by a student, it will probably be flat.
6. *Generally*, all right hand notes are flat, and all left hand notes are sharp.

Over the past thirty years, my experience with my own playing, and from working with students, I have worked out a method for getting a good sound and being generally in tune.

1. Rolling the head joint in or out by changing hand position **NEVER** works.
2. Sometimes resetting the relationship between body and headjoint helps.
3. Breath support always works.
4. Working out a compromise setting of the depth of the head joint into the body to get the student in the ballpark is the best solution. Each student has to be ballparked on every single different instrument. Then it is up to the student to train their ears through interval work. Memory of position and tone color will make this much more accurate.

Here's how:

1. On a flute (piccolo is an entirely different subject), make sure that the headjoint cork is set with the tuning stick. Check the stick, it should be 17-17.5 mm. With various flutes, the depth of the cork may be placed *slightly* deeper, but not more than .5mm. Tuning sticks are not always accurate.
2. For starters, line the blowing edge of the flute's embouchure hole up with the outer edge of the in-line keys. I let my students vary only after a couple of years worth of practice. This has to do with their physical shape. A student with long fingers may set up more forward.

3. Get the student to get their head up, eyes forward. This is probably the single most important feature. A head positioned downward produces a flat low register and encourages squeezing in the upper register. **Not good.**

4. Let the student cover between 1/4 to 1/3 of the embouchure with their lower lip. Less if they can not keep their heads up.

5. To tune, they must blow the way they would while they are actually playing. A majority of students blow very timidly when tuning. This produces a flat tone. If we tune them up like this, they **will** then play sharp.

6. If you use an A=440 as tuning pitch, get the student to add the G# key (4th finger of the left hand). This will slightly bring this A into the scale. Bb is ok, F is even better because it uses more of the length of the tube, and is relatively stable.

7. If you tune the A=440 to pitch, then the upper register will be VERY sharp. It will be ok overall if A=440 with the G# key depressed turns out to be slightly flat.

8. A better method is to get every flutist to play in tune with the head pulled at least 1/8 of an inch, but less than 1/2 inch. The flute will then be easy to play in tune in the high register **which is where flutes play most of their important notes.** Then you train the students to raise their pitch in the lower and middle register by speeding up the air stream and increasing the angle. This actually works wonderfully.

To raise pitch in the low and middle register:

1. Get the student to use more air, but through a smaller opening.

2. Head up, lips forward.

3. You can tune these notes by adjusting the size and shape of your mouth, throat and nose. In the business, this is called throat tuning. The amount of air used will vary according to dynamic, and vary directly with the size of opening and cavity.