

## **Bassoon Intonation Issues**

### **By Michael Burns**

**Questionable Intonation:** There are many possible causes of questionable intonation on the bassoon. A lack of correct air support can lead to several, resulting either in a flaccid and flat pitch or to the student compensating, usually with a pinched embouchure producing a thin, wavery sharp pitch. Another common mistake is for students to neglect the left hand pinkie key (E-flat or “resonance” key) from some critical notes such as the G at the top of the bass-clef staff (the half-hole G.) This tends towards being a sharp note even at the best of times, but if the student leaves off the E-flat key it will be even higher in pitch with a nasal, strident quality. Several notes on the bassoon require this key to aid pitch and/or resonance. Listed in order from low to high they are: the E-flat below the staff, the E-flat in the staff, the G, and then EVERY note above E-natural above the staff (but NOT the E-flat above the staff!) Again, if the E-flat key is left off of these higher notes the intonation and quality of the sound is affected.

When dealing with intonation problems do not suggest that the player raise pitch by biting. With a reasonable reed, bocal, and instrument a student should be able to play up to pitch with even a fairly relaxed embouchure as long as they are supporting properly. A way to help get a student to achieve slightly higher pitch without biting is to have them form the throat into the shape they make for more of an "EE" sound while they play.

If there are just certain specific intonation problems on isolated notes it is possible that it is related to the specific reed, bocal, or instrument. The students' reeds should be checked periodically to see if they are split or cracked (cracked reeds often produce VERY low pitches, as much as a half-step low, but the reed may still play so the student doesn't replace it,) or if the tip opening is too closed. Over time the pressure from the embouchure tends to close the tips of reeds. This can be another possible cause of small thin sound, lack of low note response, and sharp intonation.

**Do NOT pull out where the bocal enters the wing joint** to try and bring bassoon pitch down. This creates a void in the conical bore which leads to the entire scale being altered and thrown off in unpredictable ways. Rather, the intonation needs to be preset by:

- a. **The reed** (its shape, width, length, wire placement and configuration, tip opening, and scrape can all influence pitch both overall and in specific registers);

- b. **The vocal length** (most vocals are numbered—the higher the number, the longer the vocal and the lower it will tend to be pitched. Different bore designs will also change the pitch characteristics of different registers),

Once these are set, then pitch must be adjusted ‘on the fly’ by the player. To accomplish this, the player should alter their throat and tongue positions by ‘voicing’ different syllables. I advocate starting with the ‘pure’ vowel sounds as used in Romance languages. As mentioned above, the E sound is highest in pitch while the O or U sounds or some combination usually produces the lowest pitch on the same note.

Obviously, to do this the player needs to know where to place the note to be in tune. This requires two further elements:

- a. **The player must hear and mentally ‘sing’ the required note.** I actually go so far as to feel that the voicing mentioned above is included as part of the singing and that my throat is physically involved in the same manner as if I was singing the exact pitch but, of course, with no engagement of the vocal chords.
- b. **The player must know, anticipate and compensate for natural pitch tendencies for the instrument.** Of course, this will vary from individual instrument to instrument to some extent, but there are also acoustic properties common to most if not all bassoons. Examples are: the lowest 5<sup>th</sup> of the instrument from low F down to Bb tends to ride # with the low D, Eb and B being notorious on most instruments, the half-hole notes at the top of the bass clef staff (F#, G, Ab) tend to ride #, particularly the F# and G. The tenor register D-F above the staff tends to be flat. The upper register from F# up tends to be # with the high G and B being notorious.

As with all woodwind instruments, fingerings also can have a major impact on intonation and the bassoon has a number of alternate fingerings available to alter pitch from the standard fingering. I would suggest using caution here and advocate that a player first learn all of the standard fingerings and try and get those to work in tune before experimenting with alternates. Often the intonation problem lies elsewhere (air support, embouchure, reeds, etc.) and needs to be addressed rather than the band-aid of a new fingering applied.

### Some general thoughts on intonation:

- **Playing in tune with others is often a matter of compromise.** Even if every note you play would show perfectly in tune with a tuner, you are not necessarily right. Considerations include what function of the chord are you (in 'just' intonation the root, 3<sup>rd</sup>, 5<sup>th</sup>, and 7<sup>th</sup> all have different placement from where the tuner would say and therefore potential adjustment to sound in tune). Also, if all of those you are playing with are either higher or lower than you then you need to adjust to them in order to be correct.
- When trying to adjust and play in tune with someone else, **listen more to the other person than to yourself.** I suggest listening 90% to the person or people you are trying to match and only 10% to yourself in order to monitor if you are indeed matching. I also advocate attempting to fit your sound inside theirs which means adapting your timbre as well as intonation. Even if you are matching a different instrument this helps make it sound more in tune.
- As mentioned above, I advocate mentally 'singing' the pitches you want to play and hearing where they need to be placed to be in tune. If playing notes that are not in your own voice range (even in your head) then try using octave displacement—sometimes multiple octaves. I am lucky that the bassoon's range matches fairly well with my own voice but students with higher voice ranges may need to hear the pitches one or more octaves higher to fit with their voice and muscle reflexes of the throat. When I play contrabassoon I also need to hear at least an octave higher than it sounds.
- **Learn to identify and use the audible 'beats' or 'waves'** to aid in tuning. If one player plays A=440 and another plays A=441 or A=439 then the difference in frequency can usually be heard as an audible oscillation often called beats or waves. When a note is in tune there are no waves, when out of tune then the waves are slow when the pitches are close and get faster as the notes are further out of tune. The beats will not tell you if you are sharp or flat so you have to gradually change to see if the beats speed up or slow down if you are not already sure which way to go. Do NOT make large sudden changes as often you can overshoot and go from too sharp to too flat or vice-versa, skipping over the correct point. I will also often hear students say "I know I am out of tune, I just don't know which way." If this is the case, try a few things: 1. Listen 90/10 as mentioned above and try to make your sound fit into the other. 2. Know your instrument's tendencies on

each note so that you can suspect if it might tend to be high or low on that note. 3. Make slow, gradual adjustments to the pitch and listen for the beats to change.

- **Intonation is an AURAL skill, NOT a VISUAL skill.** The electronic tuner is a wonderful tool but ultimately your ears have to be your guide for intonation. I suggest a manner of using your tuner is to play a note with your eyes closed. Really listen to where you want it to be and feel the ‘setting’ and voicing in your throat and oral cavity, support, etc. When you think you have it correct and held steady then open your eyes to see what the tuner registers. Doing this, you can easily calibrate where there are notes that you ‘hear’ as too high or low and over time learn to adjust and correct them. This exercise should be repeated for all notes on the instrument, and preferably at different dynamics as we often alter our pitch when playing louder or softer. In fact, long tones with a crescendo or diminuendo with a tuner on can be very enlightening!
- **Good intonation is a fundamental and essential skill.** Unless a listener is truly ‘tone-deaf’ they will be able to tell if someone is in tune or not. Sometimes it is much harder for the player to hear their own intonation while playing but it can be a matter of learning how to listen and hear. There is a physical ‘feel’ associated with playing a note in tune on a woodwind instrument and this also needs to be strongly developed. Most often this relates to a combination of tongue position, throat configuration, and air support.

Good intonation is NOT optional. The best players work on this skill constantly, sometimes to the point of obsession while making it seem easy.