

**The Golden Reed.** Can one reed do it all? If you are lucky to find a “golden reed,” that one in a hundred, it is possible to have a gem that needs little or no adjustment to play comfortably. Of course, what is golden to you depends on your skill level and needs. If you have the time or means to buy or make hundreds of reeds you *might* find a golden reed that does it all. For the rest of us, *every* “worthy” reed will require some tuning adjustments to meet demands. For professional players a reed ratio of usable reeds can be as high as 1 in 5 from carefully selected cane and well crafted reeds. But it can be 1 in 20 or worse if factors of cane hardness, symmetry and resilience are not considered.

**Warm Up!** Every bassoonist should warm up the reed and bassoon before a rehearsal or performance, and check reed tuning. It can take 20 minutes for a cold bassoon to come up to playing temperature. A cold bassoon will play flat while an overheated bassoon will play sharp. The performance environment will affect the reed's tuning; temperature and humidity may be quite different than at home. How many times have we heard, "It played great at home"? Once the basic tests presented here are learned, it is possible to run through them in *less than ten minutes* and quickly target any corrections. Don't be afraid to adjust the reed minutes before performance, to be assured that it "RRRoars." As ages and changes, its tuning changes too. To know ahead of time that your reed is *not* going to fail is worth the *effort* it will take to master reed tuning techniques. The more experience you have the more you want the *reed to do the work* rather than you *muscling the reed* through the music.

**Method.** The *Quick Guide to Bassoon Reed Tuning* is a first adjustment method for complete tuning of bassoon reeds through note-by-note tests, a new reed can be quickly modified. For each test, several solutions are the outcome. With experience you will learn which for a particular reed. By keeping the guide in check individual notes on performance reeds as needed. Notes can even be temporarily “zoned” with a fingernail to boost reed response.

Those new to these reed tun:

Those who have worked with *Advanced Reed Design and Test Procedure for Bassoon* will find new techniques in this expanded testing method. One notable new element is the use of "ear plug tuning tests." A note may be in tune according to an electronic tuner yet "feel" off pitch or sound out of tune to others. It can be *false* in its overtones as a result of incomplete reed tuning and/or tone production problems. This phenomenon is not unique to the bassoon. Earplug tests reveal that what others are hearing may not be what *you* are hearing with "open ears." When the ear can't be plugged to check if a note is *true*, comparison of trill, alternate, harmonic and special test fingerings assist in achieving and maintaining accurate "true tone tuning."

This method begins with checking the reed's crown and vibrancy, followed by the "Big 5" in Fundamental Tests 1-5. This path is the best way to get every new reed playing and to determine quickly viable new reed candidates. After these five notes are adjusted, the reed should play all registers, but will not yet be fully refined. For the novice, this is sufficient until greater musical demands present themselves. For the novice *or* pro it may be a godsend to go directly to a troublesome note in any register.

**The Break-In Process.** With all new reeds, break-in process to help stabilize reeds prior to preventing mistakes in early tuning adjustments and has aged and settled with the tip of the squeeze/massage *every* newly open (or new reed purchase) to "break" back." See Example 1. After in *warm* water, squeeze between your thumb ar back from the tip to blades *until* a yav or nearly shur Repeat 50+ times complete tip r



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## PRELIMINARY TUNING

### Crow Test: Reed Vibrancy

How do you know the reed is ready to test? Answer: it crows!

1. Blow reed gently with lips *over the wires*. Increase air speed until a single pitch sounds.
2. Check the pitch with a tuner. The standard pitch should be between F and G.
3. If blown harder, does a rattling, raucous "crow" sound or does it remain a single tone?
4. If the single pitch is near F or G and the reed crows, proceed to Test 1. If not, make necessary adjustments below.

**IF SHARP:** If the single pitch is above G, reed is non-vibrant, or does not crow:

- Check for normal tip opening (1–1.5mm or  $\frac{1}{16}$ " or less).
- Open the tip by squeezing wire 1 from sides (1S) and/or wire 2 from top/bottom (2T). See Wire Adjustment Chart, p. 9.\*
- Evenly sand the front half of the blade toward the tip.
- File notches to create a "cradle" under 1st wire. See Fig. 5A.
- Thin and taper the shaded area toward the tip and corners with a sanding tool, or scraping the blades (Fig. 1). Avoid thinning at the resistance point (x) (See Fig. 1F).
- Fix tip opening symmetry imbalances by sanding or scraping.\*\*



**IF FLAT:** If the single pitch is below F:

- Check wire position and tightness.
- Adjust wires to close tip opening: 1T and/or 2S/1S.\*
- See "IF FLAT" solutions for Test 1.

## FUNDAMENTAL TUNINGS: LEVEL 1



### Test 1: F and E

#### 1.1: Pitch Centering

1. Play F with a full tone.
2. Without adjusting, check the pitch on the tuner.
3. Repeat with E.
4. Make necessary adjustments below until these notes comfortably in tune with little effort.

**IF SHARP, unstable, or sags in pitch:**

- Flip the reed, opposite (stronger) blade up. C<sup>1</sup> Thumbnail Test.\*\*
- Ream for deeper vocal penetration (8–10°)
- Adjust wires to close tip opening (1T) strengthen blade arch (2S/1S).\*
- Tighten and/or round 1st and 2nd
- Clip the tip in the yellow 1 shorten the blade length a very small amount
- Check lateral taper Ensure the center
- Narrow tip or filing

### Pitch Tendency for F and E

The tunings for F and E tend to be flat and unstable if cane is soft, tip is too thin, blade is too long or wide, or if there is a dip behind the tip. F and E are sharp if cane is hard, tip is too thick, the vibrating length is too short, blade too narrow or pad height too high for Low A, G, and F.

#### How do I know if my tip is too thick or too thin?

The leading edge of the tip should be as thin as possible to support pianissimo attacks. Behind the leading edge, the tip gradient ratio depends on the blade profile type. Fig 1E represents the actual thickness in thousandths of an inch for a Type B blade profile (p. 3). The difference in taper is greatest for a Type C profile and least for a Type A profile.

#### Tip Thickness Tuning Cross Check

Fine tuning is affected by the tuning of Harmonic B (Test 10.1).

**\*\*Check F-G Trill, Mute E on Arundo Research website.**

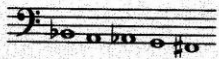
#### IF SHARP or rises with articulation:

- Adjust wires to open tip: 2T (and/or 1S).\*
- **For F**, starting 2mm from tip, thin and taper from e-e to f-f (Fig. 1B) at a 30–45° angle (Fig. 1C). Using a knife, "nibble" overlapping strokes across the tip into the plaque (See Appendix on p. 15) or remove plaque and drag tip across sandpaper, applying pressure with index finger (p. 15).
- **For fine tuning**, thin along the extremity similar to Fig. 1C at a steeper angle. Chisel Tip.\*\* *This is the super soft, clean attacks!*
- **For E**, taper and thin the reed removing cane from a-e
- Ensure the tip is thin and thinnest at 1st taper). (Fig. 1F) plaque to it
- Check for reed
- W



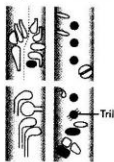
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**Test 4:****B<sup>b</sup>, A, A<sup>b</sup>, G, and F<sup>#</sup>****4.1: Pitch Centering using A<sup>b</sup>-B<sup>b</sup> Trill**

This is a vital test and should not be skipped even if you have an A<sup>b</sup>/B<sup>b</sup> trill key! A clear trill gives greater pitch flexibility and easier pitch centering on these five notes.

1. Play the test notes using the trill fingering.
2. Make necessary adjustments below.  
Note: The sound of the B<sup>b</sup> trill is normally foggy.

**Cross Check for A<sup>b</sup>/B<sup>b</sup> Trill:**

Fine tuning in Test 4 is also affected by Fork E<sup>b</sup> (Test 2) and the tuning of Fork B<sup>b</sup> (Test 11).

**IF SHARP, unstable, or produces split tone:**

- Scrape mini channels from **h** to **i** (Fig. 4A) across the tip and into the plaque.
- If more is needed for B<sup>b</sup> and A, scrape from **b** to **i** (the B scrape). (Fig. 4A.)

**IF FLAT or foggy on trill:**

- Add the Low D<sup>b</sup> key.

**4.2: Pad Height/Pitch Centering: F, G, and A**

1. Play the test notes with a tuner comparing the pitch position of the target (1st) note with its neighboring notes.
2. Does the pitch of the target note center between its upper and lower neighbors?



3. Make adjustments below.

**4.3: Pad Height/Pitch Centering: B<sup>b</sup>, A<sup>b</sup>, and F<sup>#</sup>**

1. Once F, G and A are adjusted, check B<sup>b</sup>, A<sup>b</sup> and F<sup>#</sup> noting their pitch centering between upper and lower neighbors.



2. Make adjustments below.

**IF SHARP on the target note:**

- If quite sharp on F, check/adjust tuning of F and E in ~
- Lower pad height. Temporarily insert layers of r under the key or pad stops. See Appendix, p. 1 locations (Fig. 4C-F). If improved, replace r thickness of sticky note paper. If pad is r be heard.

- For F<sup>#</sup> and G: Flip the reed, opp
- For G (and F<sup>#</sup>): Ream for der for a balance with C's tuni
- Raise pad height: inser stops. See Appendi key stop (depend
- For G (and F<sup>#</sup>
- For more

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**Pitch Tendency for B<sup>b</sup>, A, A<sup>b</sup>, G and F<sup>#</sup>**

Pitch tendencies for the normally open pads (A, G, and F) and normally closed pads (B<sup>b</sup>, A<sup>b</sup>, and F<sup>#</sup>) depend on both pad height and tone hole size. (Too high/too large = sharp; too low/too small = flat.) On most bassoons, the F<sup>#</sup> and G tone holes are purposely small (flat) to help with the half-hole pitch on octave above. This makes them less flexible in the low register (a flaw in bassoon design).\*\* Consider enlarging the G tone hole. B<sup>b</sup> tends toward sharpness unless Test 4.1 is achieved or pad height is lowered.

**Pad Height Adjustments**

Pad heights are best adjusted from the bottom up. All pad heights on the lower end of the bassoon are usually placed too high or become higher with age and playing.



Fig. 4B

All pad heights average 5mm or less from *pad* (raised end) to tone hole. The pad cup height for the note "A" normally aligns with the top of the guard (Fig. 4B).

**Test 5:****F, E, E<sup>b</sup> and D****5.1: Pitch Centering**

1. Slur on loudly to Low F, E, Eb and D.
2. Check each test note's pitch on the tuner.

**IF SHARP on low (test)**

- Adjust wires: 2T
- Notch a "crack" file 3 notch 1st wire
- Squar
- r



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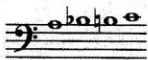
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## Slur Up Solutions

### IF NOTES HESITATE:

- Adjust wires to increase blade strength: 2S/1S.
- Shorten vibrating length by clipping the tip.
- Try harder, more resilient cane.
- Cross check all harmonic tests, especially C Harmonic, Test 10.
- Increase air speed going to the upper note, and change from an "ah" (open) to "oo" (more closed) vowel shape inside mouth.

### Test 15: Articulation and Croaking



#### 15.1: Clean Attack

- Softly start these notes *without* the use of register/speaker keys. These notes should all speak equally without distortion ("kak") at the initial attack (a clear attack quality) *pp* with a focused tone.



#### 15.2: Rapid, Clear Articulation

- Play these notes as softly as possible with *rapid* repeated staccato articulation *without* the use of register/speaker keys. These notes should all respond equally without croaking, split octave, or popping down to the lower octave.



## Articulation and Croaking Solutions

### IF ATTACK is fuzzy, uneven, unclear, or split tone:

- Clean the vocal "button" vent.
- Try other bocals. Not all will articulate.
- Adjust wires: 2S/1S.
- Correct irregularities/imbalances at or near the tip:
  1. balance tip taper (Fig. 1E),
  2. correct dip behind the tip (Fig. 1F),
  3. balance corners (twist test) (Fig. 2B).
- Correct structural imbalances by sanding:
  1. off-center spine,
  2. uneven channel tapers,
  3. uneven rail tapers,
  4. off-center tip opening and closure (see Test 2).
- Shorten blade/vibrating length by clip and re-scrape the tip.
- Use a higher, more closed vowel shape ("git") inside mouth
- Use a faster, more focused air stream.

### Final Response Test for Level 2

Play the example, blowing light puffs of air. Try with tongued articulation. If notes do not speak equally



**Articulation Tendency:** The notes D) can be unclear in attack and unresponsive in slur these notes will "pop"

**Note:** In practice responsive wires some bass down

## UPPER REGISTER TUNINGS: LEVEL 3

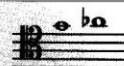


### Introduction

A good high register reed will slur up to high C, D and E<sup>b</sup> (see Test 18). It will also play high A, B, C, and D with the left hand only (Test 17). Harmonic G, A<sup>b</sup> (Test 16) and Alternate F (Test 13) must be well tuned for the short fingerings to work.

### Test 16:

#### G and A<sup>b</sup>



### 16.1: Harmonic Tuning

1. While watching the tuner, slur back and forth from the standard fingering to the harmonic fingerings comparing pitch.



2. Repeat the test for each note. Note: use alternate C#/D<sup>b</sup>

### on harmo

- Carefully sand and near thicker
- Bar



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