INTONATION PROCEDURE
for
TUNING A DOUBLE HORN

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The importance of making sure that your instrument is in tune with itself is two-fold. First, if your instrument is in good adjustment, accuracy will improve because the performer will be able to lock in directly on the desired pitch. Second, if the instrument is out of adjustment, the player will have to constantly manipulate pitches with either hand position or the embouchure, which will adversely affect endurance.

If this recommended procedure is followed many inherent intonation problems resulting from mechanical issues, notably 3rd finger combinations, can be improved. Also, during the course of a week, the only intonation adjustments that usually need to be made concern themselves with the main and auxiliary F tuning slides. It is good to periodically retune the entire instrument. I recommend once a week. Once you understand and follow this procedure, this process can be accomplished in 5 minutes.

When you are checking notes from one side of the horn to another, take special care that you do not flex the embouchure as you move the valves. This is crucial to assuring accurate settings on the slide positions. To give a more accurate reading, I recommend that initially the two like pitches be blown on the same air stream, without interruption. For instance on the first pitch, C, Play on the Bb side and continue the air as the thumb lever is released, again taking care that you do not flex the aperture. Then, to double-check, I would play each pitch with separate attacks. This will give the hornist a ‘real-world’ simulation of how the note is normally approached.

This tuning procedure is a modified version of the one recommended by Walter Lawson. This balances intonation on both sides of the horn, plus it helps solve the noticeably sharp second line A in the treble clef. Of course, no system is perfect and adjustments must be made using lip or hand position. However, with this system the adjustments are minimal and can be alleviated with alternate fingerings.

Before continuing, I should give the reader a short primer on which slides are which on a double horn. The first moveable slide that one comes to when following the leadpipe is the Main Tuning Slide. This tunes both sides of the instrument. You will use this slide to tune the open Bb horn. On the back of the horn, usually underneath this main tuning slide is another large slide, this is the Auxiliary F Tuning Slide. You will use this to adjust the open F side of the horn.
Each of the valves have two sets of valve loop slides, the longer set is for the F side of the instrument. Thus, the shorter corresponding loops are for the Bb side of the instrument. Some instruments have an Auxiliary Bb Tuning Slide that comes off the thumb valve. Holton Farkas, Holton Merker, older Yamaha 668’s, and some Paxman horns have this feature. This is a fine tuning adjustment that will make the 1&2 combination on both sides of the horn match. Geyer and Kruspe design instruments do not have this feature. Because of this, there is normally a slight discrepancy in pitch when comparing this combination; in most cases the Bb side of the instrument may be slightly higher in pitch. Being so, the competent player will use this knowledge to consciously lower the 1&2 combination on the Bb horn or else will use the third valve alone as an alternate fingering. Now that the reader is acclimated to the instrument and it’s slides, we can now discuss the tuning procedure proper.

Using a tuner, play C (concert F) on the Bb side of the instrument. Adjust the main tuning slide to get the open Bb horn in tune.

Next, play this same note. As the hornist continues to blow a steady stream of air, release the thumb valve. One must take care to notice if the second note is sharp or flat. Remember to play the ‘in-tune’ note first, that way it is the second pitch that will always need to be adjusted to match the first pitch. It is of utmost importance to keep the air stream (‘blow’) steady and not flex the embouchure when navigating from one side of the instrument to the other. Adjust the Auxiliary F Tuning Slide to where the match of pitch between the two open horns is satisfactory. As a safety check, play these notes once again, but with articulations. Take care to notice if the pitch differential has changed. If so, adjust accordingly. Do this double-check on each valve tuning.

Once the open horn is in tune, it is now possible to start tuning the valve loops. A common note on the open F horn and the 1st valve on the F horn is third space C. Begin by playing the open C. After the air has been established, engage the first valve. The note may bobble because of the added resistance. Continue to do this until the switch can be made without an interruption of pitch. Adjust the first valve loop to match the intonation of the open F horn. Again, double-check by playing each note with a good attack.

A common pitch for the first valve loops is Bb. Once again, start on the note that is in tune, that being the first valve F horn. As in the other instances settle on the first pitch then engage the valve, again taking care not to flex the lip to give a false placement to the pitch. Adjust the Bb horn first valve loop as needed.

It is always important to listen carefully to pitch and not timbre. The Bb horn, being a shorter horn has higher overtones. At times this slightly brighter timbre may be perceived as sharp (or the darker F side perceived as flat). For the novice, reliance on a chromatic tuner for pitch comparison is beneficial. This means, look to see if the pitches are matching in ‘general tendency.’ However it is important that one does not tune the valve loops to the equal temperament of the chromatic tuner. While this may seem like a logical short cut, THIS WILL MAKE THE INSTRUMENT SEVERELY OUT-OF-
TUNE! It is important that the hornist develop the ear to listen to pitch matching and intonation. Use the chromatic tuner as a tool to help train the ear, and not as a crutch.

Next move to tuning the second valve loops. Play a 4th line open D on the F horn. This is a ninth harmonic and has reliable intonation; it is only a few cents sharp. As the air is sustained, play this same note on the Bb horn (1&2). Undoubtedly this note will register quite high. Bring this note down to pitch by pulling the second valve loop. This tuning method will also help remedy the normally sharp A and D in the staff.

After this, play a B on the Bb horn and adjust the F side second valve loop accordingly. Always notice that we are continuing to play the in-tune note first.

Now that the open, first valve, and second valve loops have been tuned, it is time to check what we have done. Though individual valves may have perfect intonation, there becomes a problem when valves are combined. Without being too technical it suffices to say that, the longer the valve combination used, the sharper the instrument becomes. Thus the 1&2 valve combination will be a little high. The 2&3 valve combination will be noticeably sharp. However the 1&3 and 123 valve combinations are respectively very sharp and excruciatingly sharp. So much, in fact, that on the F horn, low C and C# it is recommended to use the corresponding notes on the Bb horn instead.

To illustrate where we are, play the second line A on the F horn. As this note is being sustained, depress the Bb thumb valve. There should be only a slight discrepancy of pitch. If these notes are noticeably far apart, stop and redo the entire tuning procedure from the beginning. If there is only a slight discrepancy, adjust the Auxiliary Bb Tuning Slide to match that of the F side pitch.

The third valve loop is equal in length to the first and second valve loops combined. Conventional wisdom would be to match these loops to the respective combinations and be done with it. However, there is a better solution that will give us better options for good intonation on long valve combinations.

On the F Horn, play the second line A. Keeping the thumb depressed switch from the 1&2 fingering to that of just the 3rd valve. Tune this third valve loop slightly low to that of the 1&2 combination. This is a stop-gap measure that will allow the performer the opportunity to only lip down slightly the 2&3 combination while only having to slightly raise the alternate 3rd finger A/E. Once you are satisfied with the pitch of the F Horn 3rd finger loop, adjust the Bb 3rd finger loop to this pitch.

Though this procedure seems complicated, once the player understands the procedure, it can be accomplished in several minutes. Depending on temperature and state of the player’s chops, one may need to check the instrument’s intonation once or twice weekly. Below is a flow chart that may make this procedure easier to follow.
<table>
<thead>
<tr>
<th>Bb Side</th>
<th>F-Side</th>
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<tbody>
<tr>
<td>1. C (adjust main tuning slide)</td>
<td>2. C (adjust F aux. slide)</td>
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<tr>
<td></td>
<td>3. C (adjust 1st Valve Slide)</td>
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<tr>
<td>5. Bb (adjust 1st valve Slide)</td>
<td>4. Bb</td>
</tr>
<tr>
<td>7. D (adjust 2nd Valve Slide)</td>
<td>6. D (4th line open note)</td>
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<tr>
<td>11. A (1&amp;2) (adjust aux. Bb tuning slide)</td>
<td>10. A (1&amp;2)</td>
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<tr>
<td>12. A (3) (adjust 3rd valve slide slightly flat)</td>
<td>13. A (3) (adjust 3rd valve slide)</td>
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