The Horn

Information for Future Music Educators

Jacqueline Fassler-Kerstetter

Come on! Give it a try!
Table of Contents

Introduction .................................................................................................................................. 3
Getting Started: Basic Care of the Horn .................................................................................. 4-5
Mouthpiece Placement and Embouchure .................................................................................... 6-8
Posture: Holding the Horn Correctly .......................................................................................... 9-10
Right Hand Position ..................................................................................................................... 11-13
Tone Quality and Breathing .......................................................................................................... 14-15
The Double Horn .......................................................................................................................... 16-17
The Single Horn ............................................................................................................................. 18
F Horn vs. B-flat Horn: What will your choice be? ................................................................. 19
Range ............................................................................................................................................. 24
Exercises to Work on the Low Range ....................................................................................... 25
Exercises to Work on the High Range ....................................................................................... 26-30
Tuning ........................................................................................................................................... 31-34
1. Tuning the Double Horn
2. Tuning the Single Horn
3. Right Hand Movement for Tuning Purposes
4. Why the 1+2 Combination Tends Sharp
Transposition: F Horn and Concert Pitch .................................................................................... 35-37
Care and Maintenance of the Horn .............................................................................................. 38-42
1. How to grease and oil the horn
2. Repairing the rotary
3. Stringing the valve
4. Cleaning the mouthpiece and leadpipe
Muting and Hand Stopping .......................................................................................................... 43-45
Purchasing Horns and Mouthpieces ............................................................................................ 46
A Brief History of Horn with Links to Scholarly Articles .......................................................... 47-48
Orchestral Music for the Horn and the Horn Player’s Need to Master Transposition ............... 49-50
Hooray! ......................................................................................................................................... 51
Appendix A: Fingering Chart ....................................................................................................... 52
Appendix B: Exercises to Practice ................................................................................................ 53-55
Appendix C: High School Level Etudes, Kopprasch 60 Selected Studies, Book 1, pp. 1-2 . . . . . 56-57
Appendix D: Horn Quartet, Hymne an die Nacht by Beethoven, trans. by Bernard Dewagtere (free-scores.com) .................................................................................................................. 58
Appendix E: Horn Solos/Duets with Piano (from free-scores.com)
1. Beethoven’s Ecosaise, arranged by Alastair Lewis ................................................................. 59-61
2. Gounod’s Ave Maria, arranged by Bernard Dewagtere .......................................................... 62-64
3. Handel’s Water Music, arranged by Alastair Lewis ............................................................... 65-66
4. When the Saints Go Marching In, arranged by Alastair Lewis ............................................. 67
5. Swing Low, Sweet Chariot, arranged by Bernard Dewagtere ................................................ 68-69
6. Pavane melancholique by Kees Schoonenbeek ...................................................................... 70-75
7. Johann Simon Mayr’s Laudate Dominum (for two horns and piano),
   Arranged by Mike Magatagn .................................................................................................... 76-80
Appendix F: A Short List of Recommended Horn Literature .................................................... 81-82
Introduction-The Horn

"The sound of the horn is the soul of the orchestra." - Robert Schumann

What an introduction, right? This quote is so inspirational. It's about the beauty of the horn sound! John Williams features a horn solo in "Princess Leia's" theme. The horn's sound is warm and delicate as heard in the opening horn solo, but also strong and heroic as heard in the counterpoint to the melody during the orchestra's crescendo (around 3 minutes into the tune).

https://www.youtube.com/watch?v=kjKesuzN3GA

“To become the master of your instrument, you must first become a slave to it.”
– Phillip Farkas, author of The Art of Horn Playing

“To sit home and practice several hours a day does not guarantee becoming a top-notch player. That is only lip service—physical. It must be done with intelligence, ever trying to refine, improve, streamline. But that is painful, and few are willing to pay the price of concentration at all times. Every note played thoughtlessly is a step backwards. Better one half as much time spent practicing with a total concentration than twice as much without!”
– Fred Fox Essentials of Brass Playing

What just happened? You mean I have to WORK to become master of my instrument? As musicians, we all know that’s true. It’s also true regarding music education. What you do as a music educator, will shape the musical lives of your students!

As a future music educator, you will have tremendous impact on the students whose lives you touch. It is both a great privilege and a great responsibility to teach, and it is of utmost importance that you teach your students how to play any instrument correctly from the very first time it is in their hands. In addition to teaching them correctly, you will need to keep a watchful eye on them and continually encourage them to use good playing habits to further their success.

In my experience as a horn teacher, I have taught students who came from a very strong foundation in playing correctly. I have also taught students who did not have a background of playing correctly. If you have ever experienced stopping or changing a bad habit, you know it is quite a challenge. If that bad habit has been reinforced for 4-8 years, it is even harder to change. I’ve found the most difficult change for brass players is an embouchure change, because it involves retraining the mechanism that creates our sound. During an embouchure change, a brass player will sound like he regressed for a few weeks while facial muscles learn new roles. It takes a lot of patience and diligent practicing to get through this retraining period. People must always be careful that old (bad) habits don’t creep into their playing again. It is a difficult time, especially when the student feels the pressure of needing to play well (for an audition, band concert, etc.) but cannot.

Learning to play an instrument with good habits in addition to practicing will help most students become successful. On occasion, an instrument is not a good match for a certain student. When a student has been practicing consistently while applying good habits, but is not progressing, then the educator will need to gently (with great positivity) persuade that student to try playing a different instrument.

What a job! Are you up to it? Master Yoda wants to remind you that you are in control of your own destiny (and your students’ destinies):

“Do. Or do not. There is no try.”
Getting Started: Basic Care of the Horn

It’s time to start learning about playing the horn! But, before you get started, it’s essential to learn about basic care of the instrument. This will help prevent damaging the horn.

1. Place the case on the ground (not your lap) when removing the horn. In general, the bell side of the case will be on the left as the case lies in front of you. Carefully open the latches and case. The first time you open the case, notice how the horn is placed in the case and where the mouthpiece is located.

2. If you notice any loose items in the case that are not soft (like a cloth), remove them. Oil bottles, grease jars, extra mouthpieces, and lyres should NOT be set loosely in the case, as they will dent the horn. Some cases have a special compartment for these items, but others do not. If your case does not have a special compartment for these items, then you should carry them in your backpack or some other bag. Leaving a mute in the bell of the horn is also not recommended. It can lead to denting the bell.

3. After you take the horn out of its case keep the horn with you (especially if you are in a crowded room). Do not set the horn on your chair. This is one of the most common ways that a horn gets damaged in the rehearsal room. When a horn is placed on a chair, the bell hangs over the end of the chair. During a busy time in the rehearsal room, like when people are moving stands, a person could brush against the bell. When that happens, the horn can be pushed back against the back of the chair (and get dented) or it can fall off the chair and be damaged very badly.

4. If you need to walk away from your horn, it’s best to put it back in its case and latch the case to prevent damage.

5. When you put the mouthpiece in the leadpipe, twist it counterclockwise. This will keep it from falling out of the horn when you are turning the horn to empty water. When you remove the mouthpiece at the end of your practice session or rehearsal, twist it clockwise.

6. Do your best not to drop the mouthpiece! Dropping the mouthpiece will dent the shank, and it will affect your playing negatively.

7. Do NOT pound your mouthpiece into the horn. This could make it get stuck in the horn, and then you will need to take it to a repairman (unless you own a mouthpiece pull).

8. Make sure your mouth is clean before playing into the horn. Do not drink sugary drinks while practicing your horn. Do not chew gum when playing the horn. If you cannot brush your teeth before playing the horn, rinse your mouth with water.

9. When removing condensation from the first, second or third slides, please depress the respective valve to avoid forcing too much air through the rotary mechanism. If
you hear a “popping” sound when removing a slide, it means you forgot to depress a valve. Avoid that popping sound!

10. Underneath slides 1, 2 and 3 of the F horn, are slides 1, 2 and 3 of the B-flat horn. When emptying water from the B-flat slides, you must depress the thumb valve also. For example: There is water in the 3rd valve on the B-flat side of the horn. (This is the slide that is below slide number 3 pictured above.) You must depress the 3rd valve AND the trigger when removing that slide.

11. Upon removing the slides to empty water, do not place them anywhere dirty, because the dirt might get transferred to the interior of the horn, negatively affecting the rotary valve mechanism.

12. After practicing or rehearsing, empty the condensation in the leadpipe before putting the horn in the case. This will prevent case damage as it protects the case from condensation that might leak out of the leadpipe. You can empty the water in the leadpipe by rotating the horn counterclockwise so that the water pours out of the leadpipe before you put it in the case. (If emptying water confuses you, keep in mind that gravity influences which way the water pours. Turn the horn so that the water will flow towards the tube’s opening.) Some horns come with little caps for the leadpipe.

13. When you put your horn away, place the case on the floor (not on your lap). Upon closing the case, check for difficult or bad latches. Please be careful that latches are latched before carrying your case.
Mouthpiece Placement and Embouchure

There are similarities between different brass embouchures, but there are also differences. The horn embouchure uses more upper lip inside the mouthpiece than the embouchures on other brass instruments. Most professional horn players use about 2/3s upper lip and 1/3 lower lip inside the mouthpiece. In general, this is necessary to move quickly and flexibly through the horn’s 4-octave (plus) range.

When switching a student to the horn from a different instrument, pay attention to the student's mouthpiece placement. If that student has been playing with a half and half mouthpiece placement on a different brass instrument, she might be inclined to play the horn with a half and half placement. Although, there are always exceptions, typically a half and half mouthpiece placement on the horn will create an unpleasantly bright tone quality and produce great difficulty in the lower register.

General guidelines for mouthpiece placement:

1. Most often, the upper part of the mouthpiece will be positioned on the skin above the flesh of the upper lip. (Avoid placing the mouthpiece inside the flesh of the upper lip.) However, if the student’s upper lip is very full, this might not be possible.

2. Depending on the fullness of the lower lip, the bottom rim will be placed either inside the flesh of the lower lip (einstellen, meaning “set in”) or under the flesh of the lower lip (ansetzen, meaning “set on”). When using the einstelle placement, put the mouthpiece rim just inside of muscle that you can feel at the edge of the bottom lip.

3. Center the mouthpiece from side to side, unless dental structure prohibits this.

A mouthpiece visualizer may be used to view what the embouchure looks like inside of the mouthpiece. In both photos, there is substantially more upper lip than lower lip inside of the mouthpiece.

This photo shows some of the skin located above the upper lip inside of the mouthpiece. This is an example of an ansetzen embouchure. Notice that the embouchure outside of the mouthpiece appears as if there is more lower than upper lip. This is why using a visualizer to see inside is important. Picture is from www.poperepair.com

This horn player has fuller lips, so the flesh above the upper lip is not inside the mouthpiece. Because this player has a fuller lip, he is using an einsetzen embouchure. Picture is from www.hornmatters.com
If you do not have a mouthpiece visualizer, it’s possible to use the ring at the end of the second slide as a visualizer. The diameter is a little wider than a horn mouthpiece, but the percentage of upper vs. lower lip seen through this make-shift visualizer remains about the same.

It is ideal to use a mirror when first learning mouthpiece placement! If you don’t have a mirror, you could set up your phone’s camera to show you your embouchure.

a. Bring the mouthpiece down from your nose while allowing your lips to take the ü formation. The mouthpiece should naturally rest on the lips at about 2/3s upper lip and 1/3 lower lip. Make sure to angle the mouthpiece so there is slightly less pressure on the upper lip. (Typically the downward angle will be about 20-30 degrees.)

b. You can place the mouthpiece on the bottom edge of your lower lip and tip it up into place. As you tip it into place, pretend you are gently drinking from a straw. Keep the mouthpiece angled downward slightly to insure less pressure on upper lip.

Embouchure: Horn players use what we call a “smile-pucker” embouchure. The corners should be firm. The muscles (called the modioli) located at the smile lines of our faces should be pressed against the teeth. Notice that in all of the previous pictures, the players’ modioli are set against their teeth. When the embouchure is set with the modioli as pictured, puffing the cheeks is not possible. (Puffing the cheeks creates a weak embouchure as it diverts the focus of the air.) The jaw should be positioned slightly forward and the teeth slightly open. Imagine that you are spitting a watermelon seed. This will position your jaw perfectly for playing the horn (both by bringing the jaw forward and opening the teeth).

a. Speaking the German sound of the umlauted “ü” creates the perfect smile-pucker formation. If you cannot create the ü sound, the word “to” also works nicely.

b. Some horn teachers suggest the combination sound: mmm-puh.

c. Moisten your lips. Moistening your lips will help the lips vibrate more freely resulting with better flexibility (i.e., moving easily from note to note).

d. After moistening your lips and creating one of the formations recommended above, buzz on the mouthpiece. Practice buzzing up and down. The tongue will move up and down as pitch rises and falls. Focus on the feeling inside the mouthpiece.

e. Avoid applying too much pressure on the upper lip!
The mouthpiece is angled downwards and my chin in a slightly forward position. Corners are firm and my mouth is set in a ü position. The modioli are pressing against my teeth.

Keep in mind that even though the corners of the mouth are firm, the lips inside the mouthpiece remain relaxed enough to allow the aperture to vibrate.

Whether one plays in the high or the low range, the corners of the mouth remain in the ü position (with modioli pressing against the teeth). The vowel formation inside the mouth, tongue position, and the space between teeth is what differs. The following photos demonstrate 3 octaves of Gs. Embouchure differences from second-line G are noted.

Assignment: [http://www.youtube.com/watch?v=32WbTcTxj0k](http://www.youtube.com/watch?v=32WbTcTxj0k)
Assignment: [https://www.youtube.com/watch?v=MWcOwgWsPHA](https://www.youtube.com/watch?v=MWcOwgWsPHA)
Assignment: Practice buzzing on the mouthpiece. Smear and gliss between notes, and focus on what that feels like. Every day, try to expand your range by playing smears and glisses on the mouthpiece. Aim for a buzzy buzz. The buzzier your buzz, the better your sound will be when you play on the horn.
Posture: Holding the Horn Correctly

1. Be natural! Sit with good posture Do not rest your back on the back of the chair, as that will be create a slight slouch that is bad for air support.

2. Rest the bell of the horn on your right leg so that the bell aims at about the 4:00 o’clock position. (You might prefer playing off your leg, but keep in mind that the young student might find the horn too heavy to play off his or her leg.)

3. Maintaining good posture, bring the horn to your mouth. Do not contort your body to get to the horn (this will constrict air flow). The leadpipe should be angled downward to avoid too much pressure on the upper lip.

4. Your left hand fingers should be slightly curved to achieve fast technique. Place your left thumb on the trigger and your pinky in the pinky ring. If the reach between the trigger and pinky ring is too large, one can purchase a “horn holding strap” as pictured in the right photo below.

5. If the mouthpiece does not naturally come to your mouth (being too high or too low) when resting the bell on your right leg, then adjust your right leg until you find that perfect position.
Unfortunately the majority of student-model horns, whether single or double horns, have about the same sized wrap (circumference). Because of their short torsos, young children will have problems using good posture while holding the horn. Holding the horn while resting it on the leg like an adult might result with the mouthpiece being a few inches above a student's mouth.

When this happens, the student’s first inclination will be to tip the head (thus craning the neck) to reach the mouthpiece. This can cause neck pain and will result in an obstructed air stream. Instead of moving the head to reach the mouthpiece, young horn players should adjust their right leg to bring the horn down as needed. If this doesn't work well, try resting the bell on the chair beside the student’s right leg. (I’ve had some young students use a little pillow for padding between the chair and the horn.) Ideally, if the student is strong enough, he can play off of the leg. The lighter weight of a single horn would come in handy in this situation.
Right Hand Position

Positioning the right hand in the bell correctly is necessary for good intonation. All horns are manufactured sharp with the knowledge that the horn player’s hand/arm will tune the horn down into pitch. Positioning the right hand correctly will produce a more focused sound, more stability on high notes, and evenness of intonation throughout the 4-octave range of the horn.

1. Slightly cup your hand as if you are drinking water from it (or holding some change in it). Keep your fingers and thumb together. There should be no hole between the thumb and the index finger. Some horn players call this the “pay me please” position.

2. Place your hand in the bell so that your knuckles and back of hand are placed against the bell throat. Imagine a straight line from the front of the hand through the back of the hand through the bell. That straight line would be at the 2:00 position. (The sound will pass between the flesh of your hand and the other side of the bell. Your knuckles will be touching metal.)

Notice that the wrist and arm remain straight up to the elbow.
3. Make sure that there is at least a 2-inch opening between the flesh of your hand and the other side of the bell. Your arm (up to the elbow) should be straight. Make sure not to collapse your wrist, as that will create a muffled sound and flatten the pitch.

4. If this hand position is done correctly, one can use it to play off the leg. The majority of the weight of the horn will fall on your thumb and first-finger knuckle.

5. Sometimes this hand position can be awkward for young students. When resting the bell on the right leg, the student can rotate the hand position to the bottom of the bell, so that the palm is facing upward. This is also helpful because it:
a. directs the sound up towards the student’s ears
b. keeps the student from collapsing his wrists (and thus preventing him from muffling his sound)
6. Intonation will be very sharp if the hand is not in the bell at all, if it is placed with the palm flat on the bell, or if the student is just holding the rim of the bell.

7. Pitch will be very flat, if the hand is too closed in the bell. (Closing the hand too much distorts sound waves. Distorted sound waves make the pitch go flat.)

Assignment: [http://www.youtube.com/watch?v=Oq5RibwLxfQ](http://www.youtube.com/watch?v=Oq5RibwLxfQ)

Assignment: Practice good posture and hand position as demonstrated in this video. Begin practicing the breathing and tone quality exercises on the next page.
Tone Quality and Breathing

From warm and compact to brilliant and expansive, the horn sound can blend easily with woodwinds, strings and with brass. The horn’s popularity in movie scores is clear when one thinks of the horn solos and tutti sections in recent movies like Titanic, Jurassic Park, Star Wars, and many other movies. (Think of the first time Kylo Ren’s theme is played!)

There are numerous recordings of great horn playing that you can find on the internet to play for young horn students. I recommend finding recordings of the Vienna Horns and The London Horn Sound. It’s important that students hear inspirational recordings like these, because in addition to providing excellent examples of the tone quality of the horn, they demonstrate the vast range of the horn (over 4 octaves) and the technical capabilities one can achieve. One of my favorites recordings is of the Vienna Horns playing Jurassic Park.
https://www.youtube.com/watch?v=EAJT9Bk_GeQ What beauty! Even my 5- and 8-year old sons enjoy listening to it! Another of my favorite recordings is The London Horn Sound playing Tico Tico. It is an excellent demonstration of technique.
https://www.youtube.com/watch?v=XDJqMs77vA

Listening to recordings of horn players is very important to help students conceptualize their sound ideal. This is an often-neglected aspect of practicing. If teachers continually emphasize the importance of listening, hopefully students will develop the habit of listening to music and enjoying it.

To begin working on tone quality, one must first work on breathing. Breathing is a technique that should be practiced, because the student should learn to take the fullest breaths possible. Keep in mind that young students have smaller lung capacity. Start by having them do an exercise like the following:

The beat = 60.

1. Standing up, start with a simple yoga exercise (the sun salute). As you breathe in for 4 beats (throat relaxed thinking “how”), raise your hands above your head. The hand/arm motion is similar to a jumping jack (at the side of the body) but should take the entire 4 beats. Exhale for 4 to 8 beats while lowering the hands. Repeat this a few times.

2. Begin the yoga exercise again, but this time after the inhalation, hold (suspend) the air, while lowering your arms. Continue to hold the inhalation. Focus on the feeling of your lung filled with air while your arms are in a normal position. Many students will say it feels tight across the chest. I like to emphasize that it’s a stretching sensation, because their chest muscles are not yet “practiced” at having that much air in the lungs.

3. Sitting or standing, practice inhaling 4 beats and then blow out for 8 beats through pursed lips. Aim to fill your lungs to the point that the sensation you feel is similar to #2 above. Repeat this exercise 4 times. If the 8-beat exhalation seems easy, try a 12-beat exhalation. If 12 seems easy, try 16, etc.
4. Practice inhaling 2 beats and then blow out 8 (12 or 16) beats through pursed lips. Repeat this exercise 4 times. Make your goal to take in the same amount of air as you did when you had 4 beats to inhale.

5. Practice inhaling 1 beat and then blow out 8 (12 or 16) beats through pursed lips. Repeat this exercise 4 times. Make your goal to take in the same amount of air as you did when you had 4 beats to inhale.

After practicing the breathing exercise, you should be ready to take a full breath and play long notes on the horn. Playing long notes and long tones (crescendo/decrescendo) is the wisest plan for working on tone quality. The following long tone exercise is written for the very beginner. The volume level is kept at mp to f, because the focus of this exercise is beautiful tone quality. (Many beginners will not be able to play softer than mp until their lips develop some strength.)

\[ \begin{align*}
\text{mp} & \quad \text{f} \quad \text{mp} \quad \text{f} \quad \text{mp} \quad \text{f} \quad \text{mp} \\
\end{align*} \]

1. Always take a full breath before each example. Take a break between each long tone.
2. If the 8-beat long tone seemed easy, move on to the 12-beat long tone. If the 8-beat long tone was not easy, repeat it. At some point in the future, your capacity will increase and you will be able to move on to the 12-beat and 16-beat examples.
3. Play this on all notes that are within your playing range.
4. To maintain good intonation as you get louder, your aperture will open. As you crescendo, pay attention to your aperture. As air increases, feel it open. As air decreases, feel it close. If you listen carefully and make sure your intonation stays even, your aperture will open and close as a result.
5. After you have mastered the mp to f dynamics, increase dynamics to p, ff, and pp.

*If your sound is pinched or clenched, try opening your teeth until your sound becomes more resonant.

As you practice breathing and practicing tone quality, keep these points in mind:
1. Keep the body relaxed when inhaling. Allow your stomach to come out as you breathe in. This is normal. Your shoulders might rise a little as you breathe in, but there should be no purposeful movement of the shoulders.
2. As you inhale, keep the throat relaxed by forming the word “how” or “ha”.
3. When you blow out, you will need to support the air column to maintain steadiness and focus in the air stream. To work on beginning to feel how to support, hold your hand about 12 inches in front of your face and blow a steady air stream at your palm.
4. Though you will need to add some intentional “muscle” to support, avoid adding too much tension, as that will be detrimental to your sound.
The Double Horn

The standard type of horn that is used by the majority of students, amateurs and professionals is the double horn. The double horn combines two horns in different keys, F and B-flat. The player uses the trigger (also called the thumb valve or thumb lever) to switch between the two sides of the horn.

The F horn’s sound has become the standard regarding the ideal horn tone, especially in the middle and lower registers. In Vienna, the sound of the F horn is loved to such an extent, that Viennese horn players play single F horns (Wienerhorns), despite the challenges the F horn presents in the upper register. In the following link, you will hear and see the Vienna Horns playing Jurassic Park. Notice that the horns do not have thumb triggers, because they are single F horns. (Also, please notice in the close ups of the players, that the mouthpiece is positioned more on the upper lip than lower. Horn mouthpiece placement is typically about 2/3s upper lip and 1/3 lower lip.)
https://www.youtube.com/watch?v=EAJT9Bk_GeQ

The B-flat horn is a shorter instrument and is therefore easier to play in the high range, because the natural harmonics in the overtone series are further apart. In the following link, you will hear a recording of “The London Horn Sound”. In this performance, the horn players play on the B-flat horn in the high range. Notice the difference in sound from the Vienna horns. This can be attributed to the type of horns they are playing and the difference in their sound concepts.
https://www.youtube.com/watch?v=XDJqMsd77vA

Here are two more links to recordings (of the same piece). These recordings demonstrate the difference of sound between the Vienna horn (a single horn in F) vs. the double horn where the B-flat horn is used more often. (Listen to the high range in particular.)
Vienna Horns, F horn only: https://www.youtube.com/watch?v=xdGWiCNzOc
The London Horn Sound, double horn: https://www.youtube.com/watch?v=h0Uw2X5XZCo

Pictured above are two standard double horn models that are often found in high schools in the USA. In the US, most double horns stand in the key of F, meaning that when the
trigger (thumb valve) is not depressed, the horn plays in the key of F. When the trigger is depressed, the vibration is directed through the B-flat side of the horn. Traditionally, horn players in the US are taught to use the F side of the horn in their beginning range. In Europe (other than in Vienna), double horns typically stand in the key of B-flat. When the horn stands in B-flat, it means that the trigger must be depressed for the vibration to be directed through the F side of the horn. This is because typically in Europe (other than Vienna), beginners learn to play on the B-flat horn first.

One major difference between the two sides of the double horn becomes clear when comparing the harmonic series of the open F horn compared to the open B-flat horn. Both of these harmonic series are written in the key of F.

**Horn parts are written in the key of F, because horn players learn B-flat fingerings within the key of F. There is no transposition necessary when moving between the two sides of the horn.**

As you compare the two harmonic series, keep in mind that:
1. the B-flat side of the horn is shorter than the F side of the horn. Therefore, the harmonic series of the open B-flat side of the horn begins on a higher note than the harmonic series of the F horn.
2. the partials of the harmonic series of the B-flat horn are further apart.
3. when partials are further apart, it is easier to hit the correct note thus making it easier to play in the high range. This is why most horn players prefer to play on the B-flat side of the horn in the high register. It feels more secure.

**Sound Quality:**
1. Because the B-flat horn is a shorter instrument, the sound quality of the B-flat horn will tend “brighter” due to its having more upper partials in its harmonic series. This is most evident from G below the staff to first-line G, where the B-flat horn has a sound that is much brighter than in other registers. In this range, the F horn will sound “darker” because it has more of the lower partials in its harmonic series.
2. There are certain ranges where these differences cannot be heard, and certain ranges of the horn where the differences are definitely heard
3. It has become tradition to use the F horn/B-flat horn in certain registers. This is determined by the evenness of sound quality between the two horns. Using the B-flat horn from second-line G# (treble clef) and up works very well for matching sound quality with the F horn in the middle and lower register. It has become tradition in most pedagogical books to teach that this G# is the changing point between the two horns. The preferred fingerings (when to use the F and B-flat side) will be included in the fingering chart in Appendix A. The fingering chart indicates these preferred fingerings.

➤ Assignment: Practice the open partials for the F horn and the B-flat horn. Practice within your range with the goal of expanding your range. ➤
The Single Horn

Upon starting your first job as a music educator, you might find that the music department already owns some single horns. Single horns are smaller, lighter, and can be an appropriate fit for grade school students. They are also much easier for younger students to carry. You can purchase single horns in the key of F or the key of B-flat. I suggest, that if you purchase single horns, you choose what key of single horn you want, and make sure that all horns match (key-wise). This will help with intonation and overall matching of sound within the horn section.

Do NOT encourage parents to purchase a single horn for their child. It is a bad investment. New single horns range from $2000-$2,800 (priced in 2016). Resale value will be around $400, if the owners are lucky enough to sell it. (Double horns, though more expensive, hold their value if well maintained.) It’s perfectly fine for a music director to purchase single horns for beginners in a music program. Single horns cost about 33%-50% less than double horns, so they are an affordable option for a band program. Most schools do not sell their instruments, so single horns can serve a purpose in a music program (outweighing the negative of their depreciation).

Keep in mind that single horns are definitely a viable option for beginners. Double horns are a better option for junior high and high school students.

Single F horn, photo from [www.amromusic.com](http://www.amromusic.com)

Single B-flat horn, photo from an ebay listing in the UK, Seller: jimlaabs
**F Horn vs. B-flat Horn**

*What will your choice be?*

Whether you decide to start your beginners on a single horn or on a double horn, you will need to decide whether you want the student to focus his beginning range on the F horn or on the B-flat horn. Traditionally, American educators have chosen to have beginners start on the F horn. The most positive aspect of learning on the F side is that the F side offers the warm sound that we consider so hornistic. The caveat is that it is harder to hit the right notes. The B-flat horn offers better accuracy in all ranges, but the sound in the middle range tends to be unrefined.

A band director should weigh these pros and cons, and then choose what is best for his/her band. Can you think of other pros and cons? What side of the horn do you think you’d prefer to teach (or learn) first? ➔ *Assignment: Practice the C and B-flat Major scales using the F horn only and then the B-flat horn only.*

<table>
<thead>
<tr>
<th><strong>F horn</strong></th>
<th><strong>Pros</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>It has a more hornistic sound in the beginning range.</td>
<td></td>
</tr>
<tr>
<td>The fingerings are the same as trumpet and mellophone fingerings, but one octave higher</td>
<td></td>
</tr>
<tr>
<td>The majority of other teachers in the US have their students start on F horn.</td>
<td></td>
</tr>
<tr>
<td>It’s very easy to learn the B-flat horn after learning F horn.</td>
<td></td>
</tr>
<tr>
<td>- Because B-flat horn is more accurate and easier to blow in the high range, students who started on the F horn are usually willing to learn the new fingerings for the B-flat horn (and thus learn the double horn).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Cons</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>It is harder to hit the correct notes, and that can lead to frustration, especially for beginners.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>B-flat horn</strong></th>
<th><strong>Pros</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>It’s easier to hit the right notes, allowing for better accuracy.</td>
<td></td>
</tr>
<tr>
<td>It blows more freely in the high range.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Cons</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The sound in the beginning range tends trombonistic (which is fine for a trombone player but not ideal for a horn player).</td>
</tr>
<tr>
<td>Fingerings are very different from trumpet or mellophone fingerings.</td>
</tr>
<tr>
<td>Students who play mainly on the B-flat horn, are less willing to learn the F horn as they progress.</td>
</tr>
<tr>
<td>- This presents problems with intonation, when they play with students who use F horn fingering in the middle range.</td>
</tr>
<tr>
<td>- Ultimately, it makes them less versatile as a horn player (if they are unwilling to learn how to play on the F side of the horn).</td>
</tr>
</tbody>
</table>
Accuracy and the *Tutti* (Ensemble) Range for the beginner

*Is playing the horn *hard*?*

**Accuracy:** You may have heard that the horn is a difficult instrument for beginners. The reason that the horn has earned this reputation is due mainly to the location of its typical playing range within the harmonic/overtone series. Provided below is the harmonic series for the trumpet and the harmonic series for the F horn. On both instruments, the beginning range is the same area (middle C through second-line G; as the beginner advances, middle C through third space C). Notice that on the trumpet, the partials in this range are set further apart. On the horn, the partials are closer together. This means that when a beginning trumpet player aims for a G, he/she has a better chance of hitting that G than a beginning horn player. In the upper register of the F horn, the partials are stepwise beginning on 3rd line B-flat. (You have already learned that the B-flat horn offers partials that are a little further apart which is why so many horn players enjoy playing the B-flat horn in the upper register. However, even on the B-flat horn, the partials become stepwise beginning on 4th space E-flat.)

![Trumpet harmonic series](image1)

![Horn in F harmonic series](image2)

The most common exercise for practicing accuracy was first printed in Phillip Farkas’s *The Art of French Horn Playing* [Sumey-Birchard Music, 1956]. On pages 67-69, Farkas provides a detailed explanation regarding how to work on accuracy. This musical example is modeled after Mr. Farkas’s accuracy exercise with a summary of his main points. This example is written for beginners (thus the small range). It also includes transposition into concert pitch, so that the horn student can check herself on the piano or a tuner.

![Horn in F](image3)

![Piano Concert pitch](image4)

1. It is important for a horn player to be able to hear a note in his head before playing it.
2. But it is even more important that the horn player *tastes* (or feels) the note physically.
3. It is possible to learn to feel the note through the dedicated practice of accuracy.
4. The goal is to be able to confidently hear AND taste (feel) the note ahead of time.
5. Follow this procedure:
   a. Play at a relaxed tempo of quarter = 60.
   b. Inhale on beat 4.
   c. Play the note (a full quarter value) on beat 1.
   d. Take the mouthpiece off your lips on beats 2 and 3.
   e. If you miss the note or play it with a bad attack, you must repeat the measure three times in a row without a mistake, before moving on.
   f. Check notes on the piano to make sure you played the correct pitch.
*I studied with two of Phillip Farkas’s horn students (Michael Hatfield and Douglas Hill), so my horn teaching style is born from the Farkas tradition. In a way, you could say that I’m his grandstudent, which makes all my students his great grandstudents.

**Tutti Range:** Another challenge for beginning horn players is playing unison parts with other brass players or with the entire band. The majority of other band instruments are in C and B-flat, but the horn is in F. Unison band parts will be written in a range that is best for the majority of beginners resulting with horn parts that are often outside of the beginning horn players’ range (or horn parts that will have awkward leaps in the melody to remain in an easier range). Parts written outside of a beginner’s range can lead to the beginner developing bad habits like pinching or using too much mouthpiece pressure on high notes.

As an example, I will compare a trumpet part with a horn part found in a unison study. The trumpet part is set ideally for a beginning trumpet player. Actually, this trumpet part is ideal for a beginning horn player too, but the horn player cannot use that part when playing in unison with the trumpet. When set as a unison part, the horn part becomes uncomfortable for most beginners, as it includes notes above second-space A.

(Note: Measures 5 and 6 are too high for most young horn players.)
Many beginning band methods try to address this issue by having two separate pages for horn players to practice. One page is written in a good range for the horn player. The other is the unison page that is used for rehearsal purposes.

Below, please find two pages taken from the *Yamaha Band Student: A Band Method, Book I* [Horn in F, Alfred Publishing Company 1988. P. 23]. This method provides horn parts for students to practice separately as a horn section, written in an appropriate range for a beginner. The other page is the same music transposed, as it is set to be played in unison with the band.

<table>
<thead>
<tr>
<th>Title of piece</th>
<th>“Horn Only” Part (p. 23 left)</th>
<th>“Unison with Band” (p. 23 right)</th>
</tr>
</thead>
</table>
| *Home on the Range:*    | Ascends to a b-flat a few times, but the majority of notes are in a Comfortable range for a beginner. | 1. There are octave changes within the tune.  
2. Sections are high (3rd space D and up)  
Sections are low (below middle C)                                                                 |
| *Smooth as Glass*       | 1. First horn part is in an excellent range.  
2. The second horn part does descend below middle C, but only by a half step. | The first horn part is set consistently too high. It will be tiring and potentially will encourage bad habits (pinching, too much mouthpiece pressure). |
| *Give me that Old Time Rel.* | This is in an excellent range for a beginner | Many notes are 3rd-line B-flat and above (same results as Smooth as Glass) |
Even though the horn presents these challenges to beginners, it is possible to have young students start on horn. The band director should target students who have had previous musical experience (piano and strings). Also, it’s important to find students who have the right personality to play the horn.

Students who
1) are not afraid to be the “only” horn player in the band.
2) do not require instant success/gratification.
3) are willing to spend time practicing the instrument.

And parents who will
1) encourage their child to take private lessons.
2) and/or support their child by helping them during their practice sessions with accuracy (i.e., playing matching pitches on the piano).

Due to the challenges the horn presents to beginners, some band directors opt to have potential horn players begin on trumpet first. After the student develops an ear and some embouchure strength, the band director switches him to horn. This can work fine, as long as much attention is focused on proper mouthpiece placement and embouchure formation. The trumpet mouthpiece is placed about half upper lip and half lower lip whereas the horn mouthpiece is placed 2/3s upper lip and 1/3 lower lip. It is important to encourage proper mouthpiece placement and horn embouchure, as it will allow for flexibility within the complete range of the horn as the student advances.
**Range**

After becoming a proficient player in the beginning range, the student should begin working on expanding her range. It is important for the student to maintain good habits when developing the low range and high range. In the "Mouthpiece Placement and Embouchure” section of this book, I assigned a youtube video for you to view. It is a video of Sarah Willis, hornist from the Berlin Philharmonic, playing through the range of the horn while having an MRI scan done. When one begins to work on extending his range, I suggest he study this video. [https://www.youtube.com/watch?v=MWcOwgWsPHA](https://www.youtube.com/watch?v=MWcOwgWsPHA)

Sarah is playing a natural horn in the key of E-flat, and thus on the harmonic series in E-flat (written B-flat harmonic series for horn). It is clear that tongue movement plays an important role as sheascends and descends between the ranges. As Sarah demonstrates playing in the high range, the back of her tongue rises and the entire tongue moves forward. The height her tongue (on the highest notes) is astonishing, as it appears to be almost touching the roof of her mouth. In the lower register, her tongue height seems more similar to the middle register. Instead of observing her tongue at this point, observe her lips, teeth, and jaw. (In the front of her mouth, the white area shows her lips. Behind her lips, you’ll see her teeth colored black. You can most easily see her teeth when she tongues a note.) When Sarah plays a low B-flat at around 1’46” in the video, her teeth and lips are in a very open position and her jaw is lowered. As she ascends into the middle range, the distance between and teeth and lips becomes smaller but the tongue seems pretty consistent. As she ascends into the high range starting around 1’55”, the upward movement of her tongue is apparent. Notice that in her 3-octave descent (2’11” -2’25”), her tongue lowers and her teeth open as the jaw lowers. The mouth is very open on the lowest note.

**The Low Range:** Keep in mind what you observed in Sarah Willis’s video. As you begin to play below middle C, your jaw will open more and more. (Thinking “ah” will help.) The corners of the mouth will remain firm, but the flesh of the lips should be loose. This will result in the embouchure appearing to frown. This frown is not purposeful, but it a result of keeping the corners of the mouth firm as the jaw is lowers.

The most common mistake that students make when working on the low range, is that they do not open the jaw as they descend in range. When they don't open the jaw, they create an alternate (incorrect) way to play low by pooching their lips. This is not recommended, because it adds muscle to the flesh of the lip resulting in an inconsistent low register with a tight sound. (The sound is similar to a motorcycle in need of a tune up.) Keep in mind that pooching (adding muscle to the flesh of the lip) is the exact opposite of the correct embouchure for the low range, where one should allow the lips to be loose.
Exercises to work on the low range

**Chewing:** The premise of this exercise is to help the student learn to open his jaw when trying to play in the low range. I created this exercise when I had a student that was a former trumpet player. He had great difficulty opening his jaw when playing lower notes (as needed). The exercise worked wonders for him!

Practice chewing (aka opening and closing the jaw) on the same note. Allow the note to flatten when the mouth is more open. After getting used to opening the jaw, try playing down to the next note in the harmonic series and then back up. In this exercise, “N” will stand for normal position, and “O” will stand for open jaw. Play the first and fourth measures as often as needed to become accustomed to the open jaw position. After becoming comfortable on the open f horn, begin transposing this exercise downwards on the following fingerings: 2, 1, 12, 23, and 13.

![Music notation](image)

**2. Low Note Slams:** the purpose of this exercise is to teach the student how much they need to open the aperture to play lower. During a crescendo, brass players must open the aperture to keep the note from going sharp. By the time the student begins to work on the low range, he/she should have already mastered keeping the pitch in tune when crescendoing.

For this exercise, begin on a middle-range note that is comfortable. In this example, I am using middle C. Crescendo on that note while keeping it in tune. Feel the openness of the aperture. Then “slam” into the next note a ½-step lower. Continue this process, each time a ½-step lower, until you are unable to make the crescendo on a certain pitch. Practice this exercise daily, aiming to increase the low range as you train your aperture to open to play low notes more easily.

![Music notation](image)
Exercises to work on the high range

Before working on these exercises, please review the section on *Mouthpiece Placement and Embouchure*.

1. Outer mouth formation = ü (smile-pucker).
2. Inside of the mouth, the tongue will rise into an ee position (more and more as you ascend).
3. Keep the air stream steady. As you ascend, you will feel more back pressure (in the back of your mouth/throat). Make sure to blow through that back pressure, so that your airstream remains consistent.
4. On the mouthpiece, practice smearing into the higher range. Maintain a steady stream of air. (You can feel your air stream by holding your free hand about 4 inches in front of the mouthpiece as you buzz.)
5. On the mouthpiece, practice scales. As you ascend, maintain a steady stream of air.

**High Range Exercise 1: Natural Harmonics**

Use the suggested fingering for each example. The goal is to maintain a steady dynamic and a beautiful sound as you ascend and descend during each slurred phrase. While you are ascending, your tongue will move upwards. When descending, your tongue will move downwards. Maintain a consistent ü lip formation. Avoid using excessive mouthpiece pressure.

Begin with measure 1. Work on measure 1 until you can play it with ease. Once you can play it easily with a good sound, move on to measure 2. Work on measure 2 until you can play it with ease. Once you can play it easily with a good sound, move on to measure 3. Continue in a likewise manner.
Once you have mastered the exercise beginning on G, move on to the exercise beginning on A-flat. Continue in a likewise manner. If you begin straining to play any measure, mentally go over every aspect of playing in the high range correctly and then try again. If it continues to sound strained, stop for the day. The following day, practice the same exercise (beginning with the 13 fingering) during your practice session. Proceed only as far as you can play with a beautiful sound and easy slurs. Again, when you get to the point that sounds strained, stop. Repeat the exercise the following day, once again starting with the 13 fingering. ALWAYS use good habits when playing this exercise: ü embouchure, corners firm, modioli against your teeth, the tongue rises as you ascend and lowers as you descend, constant air stream, maintaining a mf dynamic (don’t force higher notes by crescendoing), and make sure that mouthpiece pressure is not excessive.

**You can simplify this exercise by practicing measure 1 in each key. Practice measure 1 with the 13 fingering, then up a half step on 23, then 12, etc.**
**High Range Exercise #2:** The focus of this exercise is air support. Play each measure boldly with a solid tongue. If you can play the five notes in measure 1 with a beautiful bold tone, then move on to measure 2. Continue in this manner. Always require good playing habits, especially avoiding excessive mouthpiece pressure. After you have mastered the G scale, transpose up to A-flat, A, B-flat, B, C, etc.

![Musical notation for High Range Exercise #2]

**High Range Exercise #3:** This exercise is good for building range as well as finger technique. It should be played as rapidly as possible. Once you have achieved ease in the key of C major, transpose upwards by ½ step to the keys of D-flat, D, E-flat, E, and F. Remember that your tone quality should always remain consistent and that your embouchure should be in a smile/pucker formation (aka ü).

*Long ago, I heard trumpet players practice this exercise, and I began playing it by ear on my horn. It is from Herbert L. Clark’s *Technical Studies for the Cornet* [L.B. Clarke, Elkhart Indiana, 1912, pp. 8-9]
Tuning

Tuning the Double Horn

1. Study your instrument’s open tuning slides. You can figure out whether a slide affects the F side or B-flat side of the horn by pulling it off of the horn and playing a note into the horn. For example, there is a slide that you are unsure of which side of the horn it tunes. Pull out that slide, and then play into the F side of the horn (no trigger). A sound comes out of the bell, therefore that slide does not affect the F side of the horn. Then you depress the trigger to play through the B-flat side of the horn. This time, the sound buzzes at the location where you pulled out the slide. The sound did not reach the bell. That means that the slide you pulled off the horn DOES affect the B-flat side of the horn.

A. The main tuning slide (that affects both sides of the horn) will be the slide located closest to the leadpipe. Starting at the leadpipe, follow the tubing until you get to the first removable slide. That is the main tuning slide.

B. The horn will have at least one slide that affects the tuning of the F side of the horn only. This slide is located on the back of the horn, closest to the bell.

C. Some horns have a B-flat tuning slide that affects only the B-flat side of the horn.

Grace’s horn has a separate B-flat tuning slide. Justin’s horn does NOT have a separate B-flat tuning slide.
D. If your horn does NOT have a separate B-flat tuning slide, then use the main tuning slide to tune the B-flat side of the horn and then adjust the F tuning slide to tune the F side of the horn.

2. **When a note is sharp, pull out.** Pulling the slide out lengthens the tubing. When tubing is lengthened, pitch is lowered. (Think of the length of a tuba to remember that longer = lower.)

3. **When a note is flat, push in.** Pushing in shortens the tubing. When tubing is shortened, pitch is raised. (Think of the length of a trumpet to remember shorter = sharper.)

4. If you enjoy alliteration, remember the **Longer = Lower and Shorter = Sharper.**

The following steps for tuning a double horn are based on a model of horn that does NOT have a separate B-flat tuning slide (like Justin's horn previously pictured). Most models of double horn purchased by educators for use in 5th-12th grades do not have a separate B-flat tuning slide.

1. Tune the open tubing on the B-flat side first.
   A. Play 3rd space C with the thumb trigger depressed (this is the B-flat side of the horn).
   B. Pull the main tuning slide out if the pitch is sharp and push in if the pitch is flat.

2. Tune the second slide on the B-flat side of the horn.
   A. Start on C (with the trigger depressed) and then depress the second valve.
   B. Compare the intonation of C and B, and then adjust the B-flat horn’s second slide. This is the slide that is hard to get to. It is underneath the F horn’s second slide.

5. Tune the first slide on the B-flat side of the horn.
   A. Play C, B, and then B-flat by depressing the first valve (with trigger).
   B. Compare the intonation of the B-flat to the C and B, and adjust the B-flat horn’s first slide. This is the first slide that is under the F horn’s first slide.

6. Tune the third slide on the B-flat side of the horn.
   B. Compare the A-flat’s intonation to C, B and B-flat. (A is naturally sharp, so don’t worry about that note.) Adjust the 3rd slide on the B-flat side of the horn. This is the third slide that is under the F horn’s third slide.

7. Follow the same procedure on the F horn, but start on second line G.
   A. Tune the open F horn on the note G. Adjust the slide.
   B. Play G and then F# (second valve). Adjust the 2nd slide on the F side of the horn.
   C. Play G, F#, and then F (first valve). Adjust the 1st slide on the F side of the horn.
   D. To adjust the 3rd slide on the F side of the horn, play an A-flat below middle C. Adjust the 3rd slide only.
Tuning the Single Horn: For the single F horn, follow the same procedure outlined in #5 above. For the single B-flat horn, follow the procedure outlined in #1-4.

It is human nature to want to be correct, and this can affect tuning, because we don’t like to appear wrong. Some brass players adjust their embouchures or air support, so their tuner will give them the smiley face. This is a dishonest way to tune, because this temporary adjustment of the embouchure and air support will certainly not occur in the middle of an ensemble piece. It is important that the student does not lip down or up when tuning. Adjust the slide, not the lip!

I recommend that if you find yourself adjusting your lip to keep that tuner smiling at 440, then close your eyes. Play the note where it feels most centered and vibrant. Open your eyes and look at the tuner. Then, adjust the slides to fix any issues.

*Please note that if you do not practice or play regularly, you will not achieve enough consistency to tune the instrument.

Right Hand Movement for Tuning Purposes: To adjust intonation, a hornist can move the right hand in the bell. Play a pitch and then close and open your right hand (in the bell). You’ll notice that the pitch flattens and sharpens as you do that.

Tuning with the hand in the bell can be confusing, because the right hand’s movement is opposite of how we move slides. If you pull out a slide when you are sharp, shouldn’t you do the same with your hand? The answer is NO! There are many acoustical articles that discuss how the hand affects intonation. The two points of view that are commonly held by scientists are:

1. When you close the hand over the bell, it distorts the sound waves, thus flattening the pitch. (Consider a train whistle as it passes you by. The pitch of the whistle flattens as it passes you, because the sound wave is distorted.) By opening the hand, you distort the sound waves LESS, thus intonation will go sharper.

OR

2. When one inserts the hand further in the bell, essentially one is lengthening the instrument by continuing the bell throat (instead of flaring so soon), thus making the bell throat longer with the use of the arm. By pulling the hand out, one is shortening the length of the instrument because the sound wave hits the bell flare sooner.

When a pitch is sharp, cover the bell with your hand a little more.

When a pitch is flat, open the bell with your hand. (You can do this by either opening your hand more or pulling the hand out a little.)
Why the 1+2 fingering combination tends sharp

For this example’s sake, suppose that it always takes adding 10% of the length of a tube to make it lower by a $\frac{1}{2}$ step. To make the math easier, suppose the F horn is 10 feet long.

**F horn, played open:**

Pretend open horn is 10 feet long.

<table>
<thead>
<tr>
<th>Added tubing to F horn</th>
</tr>
</thead>
<tbody>
<tr>
<td>0, total length 10 feet</td>
</tr>
</tbody>
</table>

| XXXXXXXXXX | F horn |
| +10%       | 2nd valve (E horn) |
|           | $\frac{1}{2}$ step below F horn |
|           | 1 foot, total length 11 feet |

| XXXXXXXXXX | 1st valve (E-flat horn) |
|           | Half step below E horn |
|           | Remember E horn is 11 ft. long |
|           | 11 + 1.1 (10%) = 2.1 |

| +10%       | D horn |
|           | Minor 3rd below F horn |
|           | E-flat horn is 12.1 long |
|           | 12.1 + 1.21 (10%) = 3.31 |

**BUT THERE IS NO VALVE for D horn, so we must use the 1+2 combination**

| 1 foot (1st valve) |
| + 2.1 feet (2nd valve) |
| XXXXXXXXXX | 3.1 feet, total length 13.1 feet |

The 1+2 combination is **shorter** than the necessary length for D horn, so it will be sharp.

What it “should” be: 3.31 feet (added to the 10-foot F horn)
What 1st + 2nd valve actually adds: - 3.1 feet (added to the 10-foot F horn)

**.21 feet short**

When tuning the 12 combination, we do not adjust the first or second slides, because those slides have already been tuned for first slide alone and second slide alone. Instead, horn players adjust the right hand in the bell to tune the 12 combination, closing the hand just a little to flatten the pitch.

**Many young horn players get accustomed to the 12 combination being sharp, and begin hearing it that way. Always promote using the tuner to keep 12 intonation honest.**
Transposition: F horn and Concert Pitch

As a future music educator, you should become familiar with how all instruments transpose. Seeing that young horn players have the extra challenge of “hitting the right note” (as discussed earlier), it will be important for you to be able to immediately recognize the concert pitch of a note written for F horn, and demonstrate that sound on the piano or by vocalizing it.

Remember this simple formula: When an instrument plays its C, it sounds its key. That means that the horn’s C sounds an F (it’s key). The horn part is always written a P5 above concert pitch. The circle of 5ths (pictured below) can be a great tool for saving time when trying to transpose between a horn part and concert pitch.

When given concert pitch, move clockwise to find the horn’s written pitch. ➔
Given Concert pitch = move Clockwise to find horn’s written pitch

When given horn pitch, move counterclockwise to find the concert pitch.
Given Horn pitch = born yesterday = move counterclockwise (i.e., backwards) to figure out the concert pitch.
Transposition Worksheet

On staff paper (or in the staves provided), transpose the following exercises. Remember to use the correct clef (if a different clef is needed), to change the key signature as needed and to practice good notation (i.e., stems up or down, beaming, etc.)

Transpose the following exercises from horn in f to concert pitch.

Horn:

Concert Pitch:

Horn:

Concert Pitch:

Horn:

Concert Pitch
Answer Sheet for the Transposition Worksheet

These are the answers to the worksheet on the previous page.

Horn:

Concert Pitch:

Horn:

Concert Pitch:

Horn:

Concert Pitch
Care and Maintenance of the Horn

If properly maintained, the rotary valves on an instrument should work very well. Your job as a band director is to teach the young student how to properly care for his/her instrument.

**Slide grease:** Slide grease is used to lubricate the slides, so that they will easily move for tuning and water removal. I prefer slide greases that are lanolin based, but other types work fine also. (Some sources suggest using Vaseline. I do not recommend Vaseline as it doesn’t last very long.) On occasion, a slide might be fitted too loosely to the receiving sleeve and will fall off the horn. Recently I discovered a slide grease that takes care of the problem by reading reviews on the woodwind/brasswind site (wwbw.com). It is called *Ultra Pure Oils HEAVY tuning slide lube.* When applying slide grease, apply the thinnest layer that will get the slide freely moving. Over greasing the slide will result with grease getting pushed into the rotor and slowing down valve movement.

**Oils:** there are two types of oil that are used on the horn. *Valve oil* is more thinly textured and looks similar to water in consistency. Use valve oil to oil the inner mechanism of the rotary valve. I recommend Al Cass Valve Oil, because it is odorless. *Key oil* is a thicker texture and is used around the stop arm hub and under the valve cap. I recommend any key oil that has a needle nose applicator. (Hetman offers two styles of key oil that will work well on the horn: light and medium. Hetman key oil is synthetic, but it is compatible with petroleum-based oils.)

**Synthetic Oils/Petroleum-Based Oils:** Do not mix synthetic oils with petroleum-based oils unless the synthetic oil is labeled as compatible with petroleum-based oils. Read the labels carefully, as they will indicate compatibility. Be careful with slide grease compatibility also. Mixing non-compatible oils will cause valve stickiness. Sometimes the valve will freeze. If a student accidentally mixes these oils, the rotary mechanism must be taken apart and cleaned.

**Oiling the inner mechanism of the rotary valve:** When oiling the inner mechanism of the horn, use valve oil with a thin, almost watery texture. To properly oil the interior of the valve, remove a slide and squeeze about 4 drops of oil inside that slide. Do not pour the oil directly into the horn, because it will pull slide grease into the rotor. Replace the slide while holding the horn in playing position, and then turn it upside down so that the oil will run into the valve. I recommend Al Cass Valve oil, as it is odorless. There are other very fine oils that you can find. Make sure to read reviews about the oils to select which ones you prefer.

---

4 drops of oil in the slide

When placing slide in horn, have the slide pointing upward at first

Turn the horn so that the oil will move down the slide into the rotor. Press the lever a few times to distribute the oil in the rotor.
If the valve is still sluggish after oiling the inner mechanism, you may have to use oil that contains a detergent to clean it. Sometimes slide grease gets into the rotor, making it sluggish. I recommend *Blue Juice*, because it has a detergent and will thin out/clean the grease quickly. (Avoid inhaling the fumes.)

**Oiling the exterior of the rotary:** Depending on how quickly or sluggishly your valves move after oiling the interior rotary mechanism, you might choose to use a thinner- or thicker-textured oil for the exterior mechanism. Having a needle-nosed type of applicator will make applying this oil around the stop arm hub more easily.

1. If the valves are still moving sluggishly, use valve oil.
2. If the valves are moving quickly, use key oil.
3. For noisy or clanky valves, you will need to use key oil, but you should check the corks to make sure that they are not worn (worn corks will cause clanking). Place the key oil in the little space between the *front head bearing* and the *top arm hub*. Also place it in the *short shaft*.

If you remove the valve cap and see a lot of green gunk (oxidation) coming up through the short shaft, the horn needs a supersonic or chemical cleaning. You will need to take it to the repairman for that work ($125-$150). For proper maintenance, have the horn cleaned about every 2 to 3 years.
Repairing the rotary: If the valve gets stuck, you may take the valve apart and clean it yourself. Necessary materials are:
- rubber, hard plastic or wood hammer (not steel!)
- screwdriver
- new string
- either scissors to cut the string or a flame to burn the end of the string (thus avoiding fraying).

Special Terminology: **WHOP** = hammering on something with the rubber hammer.

A. Remove the valve cap of the offending valve.
B. Slightly unscrew the stop arm retaining screw (only about a quarter of a turn...otherwise you risk breaking the screw.
C. Turn the horn upside down so that the valve back head is facing down with your free hand under the valve back head to catch it. **WHOP** the stop arm retaining screw. The back head bearing should fall off. If not, unscrew the stop arm retaining screw just a little more and **WHOP** it again.
D. Remove the old string. Unscrew the stop arm retaining screw all the way. Remove it and put it in a safe place.
E. With your free hand under the actual rotor (where the valve back head was), remove the stop arm hub. The rotary valve should fall into your free hand at this point.
F. Wash the rotary valve with Palmolive dishwashing soap. (Gentle with hands = gentle on rotors.) Wipe it off with a dust-free cloth of some type. Any dust on the rotor will cause further problems after you replace it.
G. With the lightest valve oil possible, oil the rotary valve before placing it back in the valve casing.
H. Replace the stop arm hub. By doing this, the rotary valve should be “forced” into a correct position. (The lines on the short shaft and the back head bearing should line up when the stop arm us up against the cork.)
I. Screw in the stop arm retaining screw (all the way).
J. Replace the valve back head. The valve back head will have a little line etched onto the outer circumference. This should match up with an etched line that is on the valve casing. (This line usually faces toward the levers and is visible in the above left picture.)
K. Screw on the valve cap until it won’t move anymore (do not force it). **WHOP** it. Screw the valve cap is some more, **WHOP** it again, etc. until the valve cap will not screw in any further.
**Stringing the Valve:** This is probably what you will find the most difficult in this repair, but it gets easier as you get more experience doing it.

A. Cut off an appropriate amount of string. Burn and pinch the end of the string until you get a nice unfrayed little point that will thread easily. (Another easy way to do this, is hold both ends of a long string over a flame at the point where you want it "cut" while pulling tightly on both ends. The flame will burn through the string and will usually leave a nice unfrayed point at the end of the string.)

B. Tie a good knot on one end.

C. Copy the step by step diagram of a valve being strung. You can also figure out how to do it by closely studying how the other valves are strung.

D. Before tightening any screws, with your left hand you must place the finger lever so that it will be even with the other levers. You also have to hold the *stop arm hub* so that it is depressed against the *right cork stop.* **PLUS** (yes there’s more... amazing that we horn players do this with only two hands) you have to pull the string tightly

E. Once the string is tight, the lever should not move any more, so your left hand will be free. Use one of your hands to continue holding the string and the *stop arm hub* against the *right cork stop.* Use the other hand to screw the little screw on the *stop arm hub.*

F. Finish by tightening the screw that is on the lever.
Cleaning the mouthpiece and leadpipe: Holding the mouthpiece under a running tap, push a mouthpiece brush from the cup through the shank to clean the mouthpiece. To clean the leadpipe, start by removing the first tuning slide. Push a snake from the leadpipe to the opening (left by the removed slide). Expect some sludge, similar to what one finds in sink pipes.
Muting and Hand Stopping

Composers sometimes request timbre changes in their music by asking brass players to mute their sounds in certain sections. The two main types of mutes that are used by horn players are the straight mute and the stopping mute. Although there are cup mutes that have been manufactured for the horn, most hornists do not purchase cup mutes as they are rarely requested in our music. Hornists can also use their right hands (in the bell) to create tonal changes. The most popular right hand muting technique is “stopping” the horn. This technique is described later in this section.

Straight mutes for the horn are designed in two styles: the De Polis design and the Rittich design. Most professionals prefer to use a Rittich-style mute, as they have a more stable lower register.

**De Polis style straight mute:**
- Humes and Berg 121, straight mute, $29.99 (MSRP $48)
- Denis Wick DW5524 straight mute, $59.99 (MSRP $97)
- Trumcor 44, straight mute, $105

**Pros:**
- The least expensive mute
- The sound is fine in the middle and upper registers

**Cons:**
- Usually not tunable
- Doesn’t work well in low range (hard to play)

A De Polis style straight mute

**Rittich Style Straight Mute:**
- Humes and Berg 134, $54.99 (MSRP $89)
- Trumcor 45T, tunable straight mute, $130
- Balu, tunable custom mutes, $150-$190

**Pros:**
- Good sound in all ranges
- Easy low range
- Most of them are tunable
  (Make sure to buy one that is tunable!)
- Professionals prefer the Rittich style mute

**Cons:**
- More expensive

**Holding the mute loosely in the bell will help stabilize the low range.**
**Stopping Mute:**

Humes and Berg 119, F horn stop mute, $41.99 (MSRP $74.50)
Balu, $250
Best Brass, non-transposing stop mute, $190

**Pros:** Can play in all ranges, nicely in tune

**Cons:** Have to transpose

Hard to make quick changes

---

**Hand stopping:**

1. Cover the bell completely with the right hand.

2. Finger the note ½ a step lower than what is written, use the f side of the horn only

3. When the bell is covered completely, the pitch will RISE by ½ step (on the f horn). Essentially, the horn becomes “shorter.” This is why we transpose DOWN a half step (on the f side of the horn). The pitch on the b-flat horn will rise by around 3/4 of a step, so avoid stopping on the b-flat horn as a general rule, although there are exceptions.

4. If the bell is covered loosely, then the pitch will lower by ½ a step. This is due to the distortion of the sound wave. Distorted sound waves = flattening of pitch. This is NOT stopped horn. It is called “echo” horn or half-stopped horn. On rare occasion, composers will ask for echo horn.

**Some helpful hints regarding hand stopping:**

A. Once you are playing above 3rd-space C#, you can use the b-flat horn, but finger ½ step higher. As you ascend, the fingering will become a whole step higher.

B. Below middle C will be funky when using your hand. Use whatever fingering will work. I’ve found that I often have to finger a whole step lower.

C. Use a stop mute whenever possible. Using the stop mute results with the transposition ALWAYS being a ½-step lower on the f side of the horn (regardless of range).

D. If your hand is small (or the bell throat is big), the pitch will probably be sharp. In this case, alternate fingerings will be necessary.

E. USE YOUR EAR to figure out the best fingerings!
What stopping the horn feels like:
1. It is very resistant 
2. You must blow incredibly loudly to get the brassy effect that composers like. So, you are blowing your air, but the sound is just a small nasally sound.
3. You must open your teeth to keep the pitch down. The embouchure must remain the same for that high note, but the teeth must be more open to flatten the pitch. Same embouchure but more open teeth = a strange sensation!
4. When playing on the f side, it feels treacherous. It is treacherous, not only because partials are closer on the f side of the horn, but because it is so resistant and “feels” abnormal.

Muting/Stopping Terminology in Music:

<table>
<thead>
<tr>
<th>Muted</th>
<th>Stopped</th>
<th>Open</th>
</tr>
</thead>
<tbody>
<tr>
<td>mettez sourdine</td>
<td>+ (located above notes)</td>
<td>o (located above the notes)</td>
</tr>
<tr>
<td>avec sourdine</td>
<td>sons bouchés</td>
<td>sons naturels</td>
</tr>
<tr>
<td>mit Dämpfer</td>
<td>gestopft</td>
<td>enlevez sourd. (remove mute)</td>
</tr>
<tr>
<td>gedämpft</td>
<td></td>
<td>ohne Dämpfer (without mute)</td>
</tr>
<tr>
<td>con sordino</td>
<td>chiuso</td>
<td>offen</td>
</tr>
<tr>
<td></td>
<td></td>
<td>aperto</td>
</tr>
</tbody>
</table>

*The terms schmetternd and cuirvre mean “brassy.” Those terms are often used when the horn is stopped, because often composers prefer a very nasal, brassy sound when requesting stopped horn.
Purchasing Horns and Mouthpieces

When selecting horns for your school, begin with researching the cost of instruments on the internet. This will give you more bargaining power, should you choose to work with a local music store.

I recommend that you purchase nickel-silver horns. Nickel silver is harder than brass and will have a longer shelf life when, on occasion, they are mishandled by students.

Below, please find a list of horns that I recommend. These were priced in 2016 at the Woodwind Brasswind on-line site. Woodwind/Brasswind has a huge selection of musical instruments and offers competitive pricing. When wwbw gets new stock, many musicians will drive to South Bend, Indiana to test and select the best instruments. Keep in mind that if you order from them, you might be getting an instrument that was picked over by other musicians (and left behind).

Listed are some high-quality horns suitable for middle- and high school students, as well as university-level students. Any new horns that cost a lot less than these will not be manufactured at a quality that is worth the price (i.e., you get what you pay for).

<table>
<thead>
<tr>
<th>Brand</th>
<th>Actual Cost</th>
<th>Supposed manufacturer rec. price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holton H179</td>
<td>$4,349</td>
<td>$6,453</td>
</tr>
<tr>
<td>Conn 8D CONNstellation</td>
<td>$4,349-$4,559</td>
<td>$6,664-$6,797</td>
</tr>
<tr>
<td>Yamaha YHR-668N</td>
<td>$4,696</td>
<td>$7,290</td>
</tr>
<tr>
<td>Hoyer Heritage 6801NSA-L</td>
<td>$5,379</td>
<td>$7,853</td>
</tr>
</tbody>
</table>

These are decent horns, if you need to spend less money.

<table>
<thead>
<tr>
<th>Brand</th>
<th>Actual Cost</th>
<th>MSRP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conn 6D</td>
<td>$3,299</td>
<td>$4,783</td>
</tr>
<tr>
<td>Holton 379</td>
<td>$3,449</td>
<td>$5,003</td>
</tr>
</tbody>
</table>

*It is best to be able to test instruments or to have a professional test them for you.

*Make sure to check the rotary valves for leakage. You do NOT want to buy a new horn that does not have good compression in the rotary valve.

**Standard Mouthpieces:**

- Holton Farkas MDC (medium deep cup) or DC (deep cup) $59
- Yamaha-James Sommerville* $47.99
- Schilke Standard $55
- Stork Meyers standard mouthpiece $73

* When purchasing Yamaha mouthpieces, purchase the mouthpieces that are endorsed by professional horn players. The standard Yamaha student-model mouthpiece tends too shallow, creating a bright tone quality.
A Brief History of the Horn with Links to Scholarly Articles

The orchestral horn was born from horns that were used for the hunt. Being an open tube, with no valves to change the notes chromatically, the pitches of the hunting horn were limited to notes that were in the harmonic series. In the early 1700s, horns began being used in court orchestras. Crooks were invented by 1703. Crooks were pieces of tubing that could be added to a horn to change the key of the instrument. The composer would write for the horn that had the most open notes for the key of a movement. If a movement was in the key of e-flat, then the composer wrote for e-flat horn. This insured that Do, Mi, and Sol were open notes on the horn. Hornists often needed to change keys within a movement, so crooks came in handy for quick key changes.

Around the 1720s, horn players began putting their right hands in the bell. This warmed their tone quality, creating more of a mellow sound effect. They also began moving their right hands in the bells to play pitches that were not in the harmonic series. This technique was called hand horn technique.

The following two pictures illustrate the hunting horn and a hand horn. Kansas State owns a hand horn with crooks that will be demonstrated in class.

An intensive study of the horn’s history is beyond the scope of this class, but if you are interested in learning more, please check these articles written by John Ericson. Kansas native John Ericson has written many informative articles regarding just about any topic related to horn, and he is a cofounder of the on-line horn magazine *Horn Matters*. Dr. Ericson is presently the horn professor at Arizona State University.

University of Horn Matters: The Horn Before 1750 by John Ericson

University of Horn Matters: The Baroque Origins of Hand Horn Technique, and the Classical Horn by John Ericson

University of Horn Matters: The Horn in the Classical Period by John Ericson

University of Horn Matters: The Natural Horn in the Romantic Period by John Ericson

University of Horn Matters: The Early Valved Horn by John Ericson
Orchestral Music for Horn and the Horn Player’s Need to Master Transposition

Because has become tradition for horn players to continue reading from the original horn parts of Baroque- and Classical-period music, aspiring professional horn player must practice strengthening her skills in transposition.

The third movement of Beethoven’s 3rd Symphony (Eroica) features a horn trio. The parts are written for E-flat horn. The modern horn player will need to transpose one whole step down when playing this part. (The arpeggio you see at the beginning of the trio will be a B-flat arpeggio instead of a C arpeggio.) To play this on “natural horn,” one needs the E-flat crook. When playing the modern horn “naturally,” once can depress the first valve and get all the notes but will need to use the right hand to play any notes not in the harmonic series.

Beethoven’s 3rd Symphony, 3rd movement

Horn 1 in E-flat

Horn 2 in E-flat
This excerpt is from the 4th movement of Brahms 1st Symphony. It is a melody he wrote on a post card and sent to Clara Schumann after hearing it played by a distant Alphorn. This excerpt is in the key of C. The modern horn player would have to transpose down a perfect 4th to play this in orchestra. (C horn = the modern F horn plus valves 1+3 if the hornist wants to play the modern horn like a natural horn.)

Brahms Symphony No. 1, movement 4

**Horn 1 in C**

In the *Quoniam tu solus Sanctus* movement from Bach's Mass in B Minor, the horn is featured on a solo in the key of D. To play in the key of D, the modern horn player must transpose down a minor 3rd. (D horn = F side of the horn plus valves 1+2 if the hornist wants to play the modern horn like a natural horn.)

The letter c located above some notes stands for “closed”. This means that on the natural horn, the horn player would have to close his right hand to play that note.

**Horn 1 in D**
Congrats on learning about the horn. Hopefully, your knowledge will impact your future horn students in such a way that they’ll be yelling “Hip hip hooray–I can play the horn!”

Hoorah! You did it!
Appendix A

Single F, Single B♭, and Double Horn Fingering Charts
Appendix B: Exercises to Practice

Repeat previous 6 measures on each note of the C major scale. Rest when you become fatigued.

Ex. 1: $j = 60$, breathe on beat 4

Ex. 2: $j = 60$, work to $j = 60$

Ex. 3: $j = 60$, work to $j = 60$

Ex. 4: $j = 60$ (optional)

Ex. 5: $j = 60$ (optional)

Ex. 6: $j = 60$

Ex. 7: $j = 60$
Easy harmonic exercise

Merrily We Roll Along

Good Night, Ladies

Faith of Our Fathers
Give Me That Old Time Religion

Home on the Range

Largo, from the “New World” Symphony

Wildcat Victory

Wabash Cannonball

D.C. al Fine

Fine

Harry Erickson

Dvořák
Appendix C: High School Level Etudes
Kopprasch 60 Selected Studies, Book 1, pp. 1-2

60 ETUDE STUDIES
für HORN

Nr. 1 Moderato. (Transposition in E♭)

Nr. 2 Moderato. (Transposition in E)
Nr. 3 Poco allegro (in E₃)

Nr. 4 Allegro (und in E₃)
Appendix D: Horn Quartet, *Hymne an die Nacht* by Beethoven

Hymn to the night (*Hymne an die Nacht*)

*Theme of the andante - sonata op. 57.*

Ludwig van Beethoven (1770-1827)

Transc.: Bernard Dewagtere

©2011 Dewagtere

free-scores.com
Appendix E: Horn Solos with Piano Accompaniment

Ecossaise

arranged by
Alastair Lewis

Beethoven

Allegro con Brio

Horn

© 2012 Alastair Lewis
Ecossaise

arranged by
Alastair Lewis

Beethoven

© 2012 Alastair Lewis
Ave Maria

On first prelude in C, J. S. Bach

Gounod Charles (1859)

Transc.: Bernard Dewagtere

©2011Dewagtere
Theme from Water Music

G. F. Handel

1685-1759

Copyright 2014 Alastair Lewis
When the Saints go Marching in

Copyright 2014 Alastair Lewis
Swing Low, Sweet Chariot

Wallis Willis (before 1862)

Arr.: Bernard Dewagtere

Cor en Fa

Piano

Slowly and swinging \( \dot{q} = 84 \)
Swing Low, Sweet Chariot
'Pavane melancholique'

Kees Schoonenbeek

F Horn

Piano

Andante \( \frac{\text{45}}{\text{45}} \)

© Canzona Music Holland

free-scores.com
'Pavane melancholique'

Ca 4'
"Laudate Dominum"

Johann Simon Mayr (1763-1845)
Arranged for Piano & French Horns by Mike Magatagan 2013

Allegretto

French Horns

Piano

H1

H2

P

"Laudate Dominum" by Johann Simon Mayr Arranged for Piano & French Horns by Mike Magatagan
Mike Magatagan (magatagan@pox.net or Mike Magatagan on http://www.Musescore.com)
Appendix F: A Short List of Recommended Horn Literature

Publishers will be listed, but I will also note whether the literature is public domain. If so, you will be able to find it on imslp.org.

Method Books
Clarke: *Technical Studies for the Cornet* (L.B. Clarke), public domain
Franz: *Complete Method* (C. Fischer), public domain
Howe: *Method* (Marvin C. Howe)
Lambert: *Méthod Complète et Progressive de Cor Chromatique* (Henry Lemoine & Co), public domain
Pottag and Hovey: *Pottag-Hovey Method, Volumes 1 and 2* (Belwin-Mills)
Tuckwell: *50 First Exercises* (Oxford)

Etude Books, Medium to Difficult
Gallay: *22 Studies* (International), public domain
Gallay: *24 Studies* (International), public domain
Kopprasch: *60 Selected Studies for the French Horn, Volumes 1 and 2* (C. Fischer), public domain
Maxime-Alphonse: *Deux cents études nouvelles, Vols 1-3* (A. Leduc). Volumes 1-3 are NOT public domain in the US, although volumes 4-6 are.
Miersch: *Melodious Studies for French Horn* (C. Fischer)
Mueller: *34 Studies, Volumes 1 and 2* (International),
Parès: *Parès Scales* (Rubank)
Pottag: *Preparatory Melodies to Solo Work* (Belwin Mills)

Etude Books, Difficult
Gallay: *12 Études brillantes* (International), public domain
Gallay: *12 Grand Caprices* (International), public domain
Gallay: *12 Studies for Second Horn* (International), public domain
Gallay: *40 Preludes* (International), public domain
Hackleman: *34 Characteristic Etudes for Low Horn Playing* (BIM)
Kling: *40 Studies* (International), public domain
Maxime-Alphonse: *Deux cents études nouvelles, Vols 4-6* (A. Leduc), public domain
Neuling: *30 Special Studies for Low Horn, volumes 1 and 2* (Pro Musica)

Recommended Books about the Horn
**Recommended Books about the Horn, cont.**

**Recommended Websites**
http://hornmatters.com
https://www.hornsociety.org

**Public Domain Etude Books for Beginners**
Lambert: *Méthode Complète et Progressive de Cor Chromatique*

Reiter: *50 Solo Stücke für das Parforce-Jagdorn* (This has a few easy natural horn exercises for beginners)
http://imslp.nl/imglnks/usimg/7/7f/IMSLP350629-PMLP566400-laut_reit_horn.pdf