PACIFIC CREST
BRASS TECHNIQUE MANUAL

HIGH BRASS

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“Page Zero” - Ontological Priors: Vision

Performance and Purpose

Before anything else, there is a core truth about our technical philosophy that cannot be over-emphasized:

Technique is a means to an end, and that end is performance.

Our goal in setting forth the technical principles in this manual is to forge a common interpretation of intent in our approach to brass performance, so that we may **use it to create meaningful and impactful experiences** together for everyone who interacts with our program. Throughout the process of developing and refining individual and ensemble technique, hold answers to key questions in mind:

- What is my end goal?
- How will I get there?
- What purpose does this serve?
- What response will I see?

Spheres of Perception

From yourself outward, all technique involves perception: the skill of knowing what it is that is happening:

- Level Zero: Self-awareness. “What am I doing, what result am I reaching?”
- Level One: Immediate proximity, the people directly next to you. “How do I relate to my neighbors?”
- Level Two: Sectional awareness. “What is happening from those who share my part or instrument?”
- Level Three: Ensemble awareness. “How do we all collectively relate?”

The Performative Self and the Critical Self

Through the process of developing and unleashing technique, we will move back and forth between the **performative self**, concerned with doing, and the **critical self**, which analyzes and evaluates. It is crucial that these two modalities of thought remain distinct, as neither operates optimally with the interference of the other. Success as a brass player very often relies on the ability to master both the physical skills of the instrument and the habits of mind that allow optimal performance, especially within the marching arts.

Bear in mind that the distinction to be drawn between the performative and the critical self does not imply that one is oblivious or unaware while in the process of performance. Part of the skillset that we seek to develop is the ability to perceive, monitor, and guide how performance progresses without breaking the **flow** by entering into an analytical state.

Process of Intent

Whether in rehearsal or practicing on your own, the processes of translating intent into performance maintain a consistent sequence: this is something that **you can apply** at all times.

- **Envision:** Be aware of the target. What is to be done?
- **Perform:** Do the thing.
- **Assess:** How well was the target achieved?
- **Diagnose:** Why did events happen as they did?
- **Prescribe:** What is to be maintained, and what is to be changed?
- **Implement:** Repeat the process.

Technical Dimension: Air

"Take a Full Breath": Relaxation, Capacity, and Binary Airflow

The breath must be **full** in capacity. Relax the chest, shoulders, and throat: any sound generated by the breath should be almost-silent, warm, and dark. Feel the cold spot on the back of your throat as you **allow** the air to enter the lungs. As the lungs inflate from bottom to top, the chest expands downward, to the sides, to the front and back, and finally upward. Do not confuse upward lung expansion with a muscular lift of the shoulders.

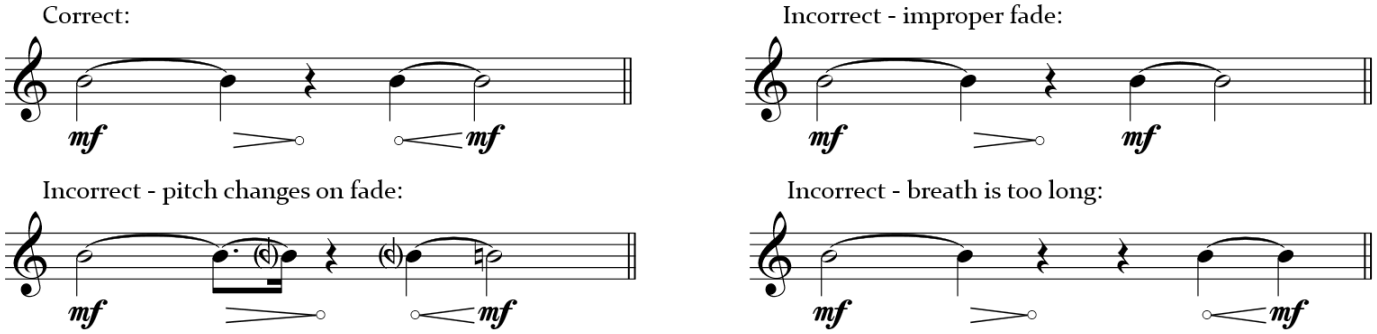
The breath must be **full** in duration. The start of the inhale is the end of the exhale, and vice versa. Thus, at any point in time, air is moving in or air is moving out – there is no other option. Note that it is much easier to move air towards the middle of your capacity than towards the full or empty extrema: **monitor** the flow of air such that its motion does not slow, inward or outward, near the end of the breath.

Releases

As the end of a note is the beginning of a breath, release long tones by **reversing** the air column completely and immediately, rather than by closing off air, tongue, or mouth. The **open-ended** sound will ring inimitably!

Stagger Breathing

To create the illusion of an **unchanging** wall of sound, we stagger the points at which we breathe. When doing this, fade out *a niente* for a full beat, take a breath, and fade back in from nothing in one full beat to the appropriate dynamic level.

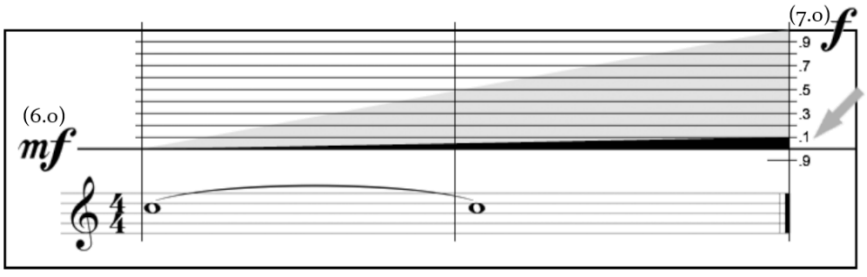


Dynamics

Adjusting the amount or **volume of air** will result in a change in the loudness or volume of sound. This is **independent of the speed** of the air, which alters the register of the pitch produced.

It is often useful to consider your individual dynamic range on a numeric scale, where specific execution is related to absolute physical potential as laid out below. In general, long tones should "**go to point-one**" as illustrated in the image: if the note in question had a crescendo, the growth would be indicated by the gray zone. As no crescendo is marked, however the growth should instead be from 6.0 to 6.1, preserving energy and preventing decay.

1	2	3	4	5
pppp	*ppp*	*pp*	*p*	*mp*
6	**7**	**8**	**9**	**10**
mf	*f*	*ff*	*fff*	*ffff*



Technical Dimension: Feet

Posture and Availability

Proper posture while playing is essential to maximize function of the breathing mechanisms. Weight should be **balanced** between the feet as well as front-to-back. Muscular engagement to hold up the instrument should not constrict the shoulders or throat. The weight of the upper body must be **lifted** up from the waist, and must not be leaning on the lower back. By default, angle your bell **fifteen degrees** above a line parallel to the ground.

Proper isolation of the upper and lower body, separated by the engagement of the **abdominal muscles**, and use of kinesthetic technique to **absorb and redirect** impact with the ground will not only allow for greater freedom and capacity of air movement, but will prevent movement from affecting quality of musical execution.

Movement is a psychophysical process, and our bodies naturally move with purpose. By holding tension or binding muscles unnecessarily, we limit the **availability** of the body to serve our conscious or aesthetic intent. Every motion is accompanied by some **counter-motion** in order to keep the body in balance. By removing artificial and habitual tension from our basic approach to playing, we free up the forces and muscles that no longer must compensate for tension.

Internalizing Tempo

In general, when relating internal tempo to that coming from some manner of external source, whether a conductor, metronome, or other performers, you must assume **responsibility** for moving to your consistent internal pulse, but constantly and **continually monitor** the relation of that pulse to the source of time. Do not simply drift along passively and approximately with the current, but actively and aggressively perform, using your sources to **verify** as you go.

Marking Time and Step-Outs

Most frequently, the primary means by which tempo is manifested in the body is through the feet. When marking time in place, motion should **initiate with the breath**, articulate pulse with the **contact of the entire foot** with the ground, and bring the foot off the ground on crossing counts. When performing step-outs to begin phrases, take **two full steps** with a long, extended leg in the initial direction before changing weight. The right foot will return to the original position on the fourth step, and the left foot will resume normal marking of time with the fifth count.

Initiation and Exercise Protocol

Align the **musical initiation** in the breath with the **visual initiation** in pushing for the step-out. After the last phrase, **halt and sustain** as notated in the exercises on this page. After this page, the halt and sustain are not directly notated, but they will always be a **repetition of the final note** of the exercise, at the point in time where the next phrase of the exercise would begin.

Finger Technique

To maintain rapid and reliable function of piston valves, it is important to use appropriate finger technique. The weight of the instrument should be supported by the **left arm and hand almost entirely** – while the right hand can provide some **lateral stability** through its contact with the casing, the fingers of the right hand and the valve stems should be left as free as possible. Rest the right thumb beneath the leadpipe on the first valve casing, and allow the fingers of the right hand to rest on top of the valve caps. Activate the piston by pressing **directly downward** with the fingers. It is important to avoid pressing the valves at an angle, as this will grind the cylinder of the valve against the casing and impair the instrument's function. The little finger of the right hand may rest on top of the finger ring but should not hook around or pull against anything.

Application of Breathing Technique

Timing of the Breath

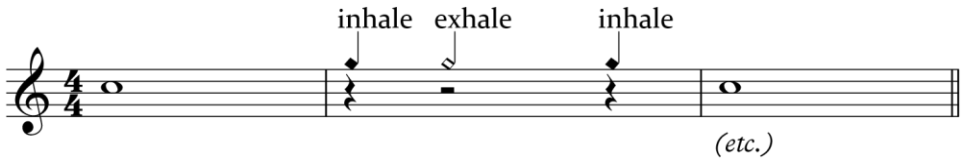
The breath is the musical initiation for the phrase. Breaths will begin one **full beat** prior to the articulation of the phrase. The length of the breath is **independent** of the dynamic or articulation style of the note that follows it. For any given exercise or excerpt, the tempo and meter will determine the rhythmic division of the full beat.

Air Attacks

At the point where a note begins, the air column must **immediately** and completely change direction and attain its necessary speed. The air behind any tone must be constant and sufficient to begin the tone from the very beginning as intended without relying on other factors such as the tongue and without allowing the air to ease in to the note at some point after its beginning. By default, air attacks are to be used following a staggered breath.

The "Machine Breath"

When exercises or excerpts have four-count rests or pauses, the airflow may be maintained by using the "machine breath" schema, as indicated below. The first breath on the downbeat is the release, followed by two counts of exhalation to clear out stale air and the breath to articulate the next phrase.



Singing

Singing is an essential tool for developing tone quality, intonation, and phrasing, as the resonance and breath support necessary for singing are similar to proper brass technique. When singing, keep the throat open and the face relaxed. Preserve depth in the sound by allowing the larynx to relax downward and keeping the oral cavity large. Add brilliance by projecting resonance through the nasal cavity and moving the voice forward in the mouth. This combination of darkness and brightness, called **chiaroscuro**, is a foundation of vocal technique.

Balance, Blend, and Intonation

Comparison of two sounds requires an appropriate balance of the two. By default, due to proximity to your own instrument as well as your direct contact with it, target hearing your own playing at a **slightly louder level** than your immediate neighbors as a benchmark for appropriate and even contribution.

Once sounds are balanced and equally strong, they must be blended: their timbres must be sufficiently similar for the acoustic waves to reinforce each other. As a general rule, **fit your sound within** the bounds of the sounds that you hear beneath you in the brass ensemble. Individual awareness and discipline in control of balance, timbre, and blend are **primary indicators of maturity and sophistication** for a musical ensemble.

Intonation is the physical phenomenon of alignment of acoustic waves, coming from specific relationships of wavelengths and frequencies. Once sounds are balanced and blended, they will either reinforce each other at an assortment of frequencies, called **overtones**, or else will audibly interfere in what are known as **acoustic beats**. Beats are audible to listeners and can be physically felt in the instrument. As notes get closer to a pure ratio, the beats slow and then disappear. Playing in tune is thus **more comfortable** and results in **louder and purer sounds** for far less effort than playing out of tune.

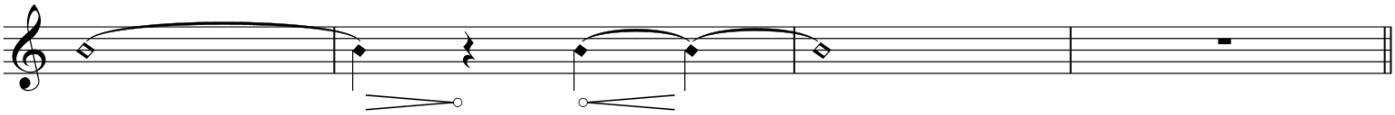
Stagger-breathing Exercises

These exercises are templates in which the specific count of the breath (and thus the counts of the fade-out and fade-in) may be adjusted. When performing these exercises:

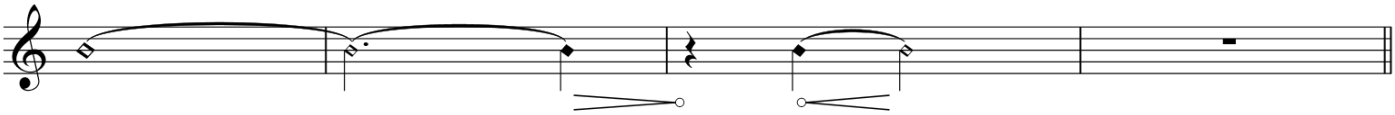
- Commit to the execution of the breath as intended, regardless of capacity at that point in the phrase.
- Monitor the speed of the fades, not to exceed one full beat.
- Maintain consistent speed of the air, shape of the oral cavity, and position of the tongue low in the mouth through the dynamic changes.
- Establish the correct airspeed immediately after the staggered breath.
- Maintain continual motion of air without interruption at the junctions between inhale and exhale.

13-count air; staggered breath on count 4

13-count air; staggered breath on count 6



13-count air; staggered breath on count 9



Stagger Breathing in Context

Stagger breathing in groups will take one of two formats. For repertoire excerpts and some exercises, each place where each player will breathe will be **specifically defined** and metered out in time. For metered stagger breathing situations, your responsibility is to **consistently** execute your breath on the same counts every time. Any deviation from assigned breathing counts will cause imbalances in the sound as the number of players playing will vary erratically. Once a breathing scheme is defined for you, either through stagger-breaths on certain long notes or in leaving smaller note values out to breathe, that scheme is your part to perform and any notes that are removed no longer exist for you.

In most technique exercises, specific breathing counts are not consistently and persistently assigned. Breathing schemas – whether to generally breathe immediately, early, in the middle, or late – will rotate each time that the ensemble sets up, so that all players get practice breathing in **all potential areas**. In particular, notes sustained at the end of technique exercises are unmetered staggered breaths. Whenever the ensemble halts to sustain at the end of one of these exercises, it is imperative that **part of the group breathe on the downbeat of the sustain** itself, or else the ensemble sound will inevitably dip once the first players begin their stagger-breathing.

Technical Dimension: Tone

Vowel Sound

In producing tone, maintain a relaxed and open shape in the oral cavity by keeping the tongue low and soft. We will most frequently use an **"Ah" or "Oh"** vowel sound to define the shape of the inside of the mouth.

Embouchure

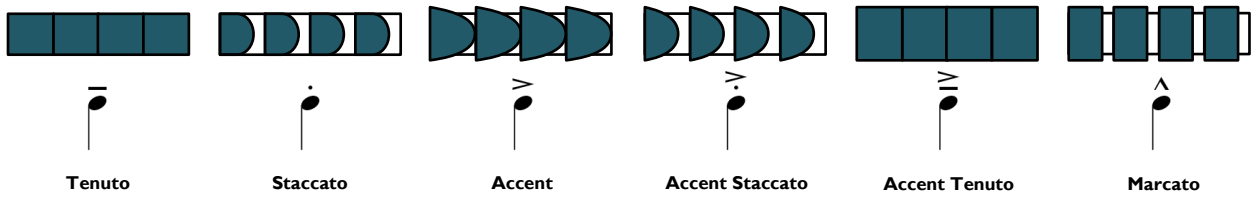
Quality of sound **directly correlates** to what is produced with the mouthpiece, thus development of a warm, resonant, and accurate buzz is a priority. Check that the mouthpiece is not forced against the lips while setting this up, and be aware that the ideal buzz for the instrument as a whole should sound somewhat **"airy"** when the mouthpiece alone is played. The corners of the mouth must remain firm, and the mouthpiece should be placed as close to perpendicular to the lips as possible. Both lips should be vibrating within the rim of the mouthpiece, and the jaw should remain open with the teeth apart.

The Front of the Tongue

Although there may be specific moments where some other definition is applied to a specific phrase or gesture, the default method for articulation with the tongue is to use the very tip of the tongue at the front of the mouth just behind the teeth to bar the air stream. It is then quickly released downward to create a **"dAh" or "dOh"** syllable. The tongue should be firm but relaxed, and the rest of the tongue behind the tip should remain at the bottom of the mouth. In the case where a firmer articulation is called for, use a **"tAh" or "tOh"** syllable concept.

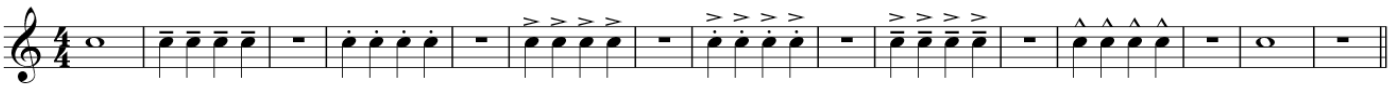
Articulation Styles

As a starting point, visualize the use of air in various articulation styles according to these diagrams. Note that the accent defines the front of a note, the staccato dot defines the back of a note, and the tenuto line defines its shape.



Articulation Series

The tongue and the breath initiation remain constant through the series of different articulation styles. Use the shape and volume of air to create each unique style.



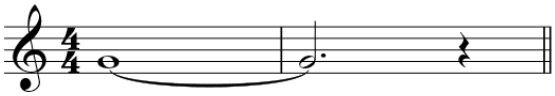
Long Tones and Lip Slurs

Long Tone Exercises

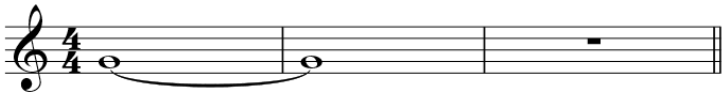
When performing these exercises:

- Move the tongue quickly and efficiently at the beginning of the note.
- Maintain consistent air speed, shape of the oral cavity, and position of the tongue low in the mouth throughout the duration of the note.
- Maintain continual motion of air without interruption at the junctions between inhale and exhale.

8-count Tone



9-count Tone



Pitch-bending and Lip Slurs

By adjusting the speed of the air behind the buzz and the firmness of the lips and corners of the mouth, the pitch produced on the mouthpiece and on the horn may be altered. In general, strive to smoothly **connect** transitions between notes so that nothing is skipped over, and then work to speed these **continuous** transitions up so that the sound of the slide between notes is imperceptible.

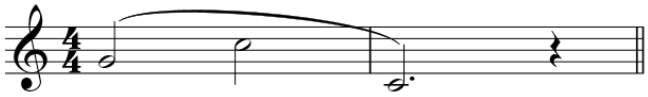
The ability to move fluidly from partial to partial on the instrument while maintaining tone quality and accurate pitch is essential. When doing lip slurs, as when bending pitches on the mouthpiece, keep the motion of the air stream continuous but slide from center-of-partial to center-of-partial quickly to minimize disruption of resonance.

Lip Slur Exercises

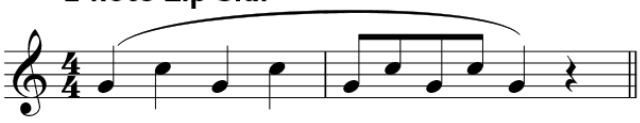
When performing these exercises:

- Create and maintain sound consistent with an 8-count Tone exercise.
- Allow the embouchure to adjust continuously between partials: do not suddenly "slot" each pitch.
- Maintain resonant tone through the end of each note and establish resonant and centered tone right away within each new note. Minimize and eliminate non-resonant sound at the junctions.
- Maintain continual motion of air without interruption at the junctions between inhale and exhale.

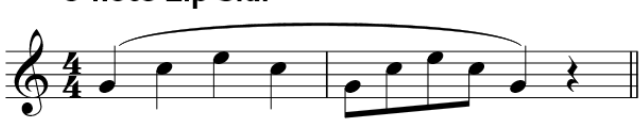
G-C-C



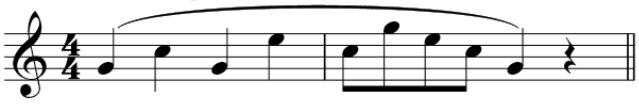
2-note Lip Slur



3-note Lip Slur



4-note Lip Slur



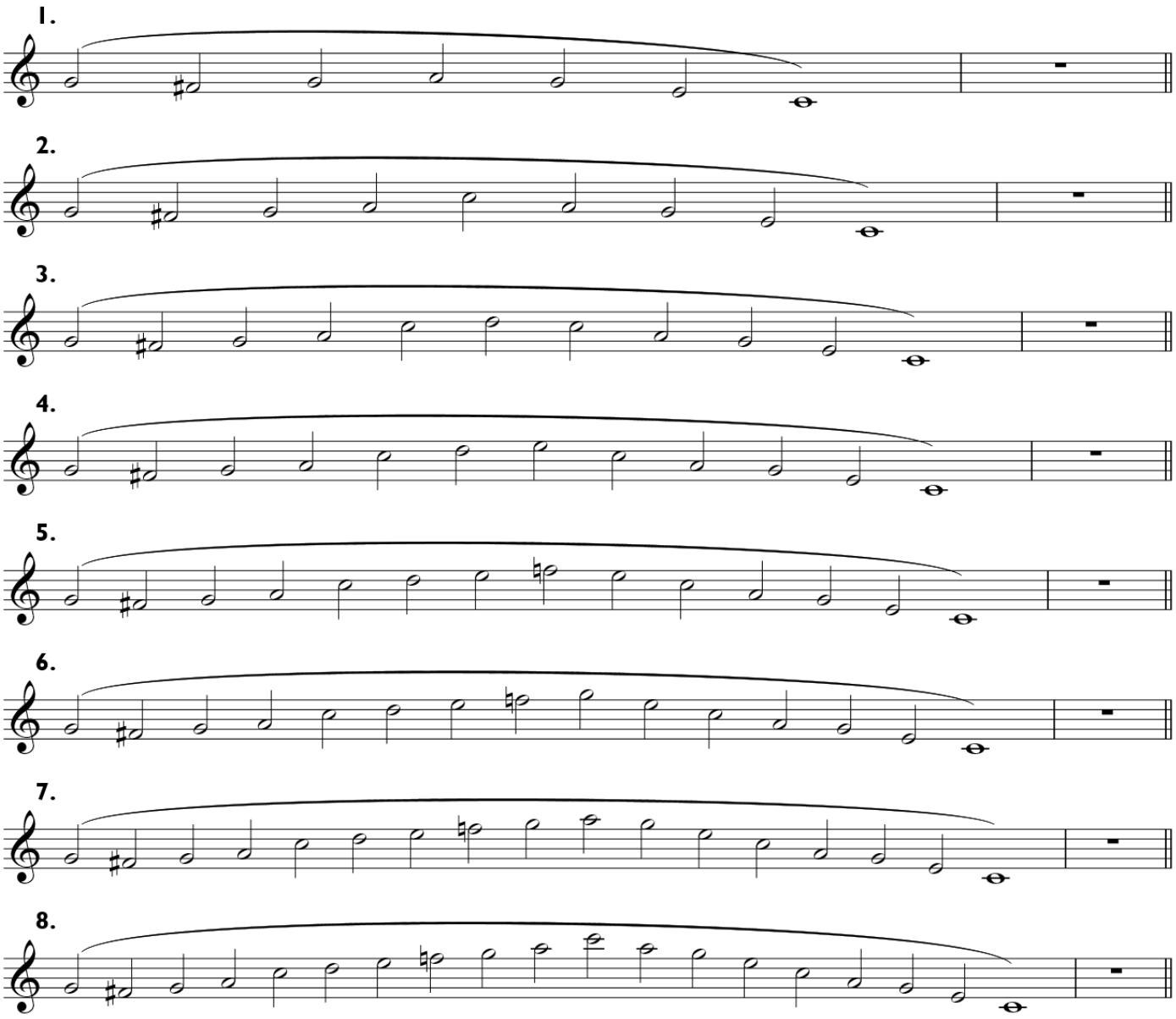
5-note Lip Slur

Extension: Phrase Length, Range, and Dynamics

Flow Studies

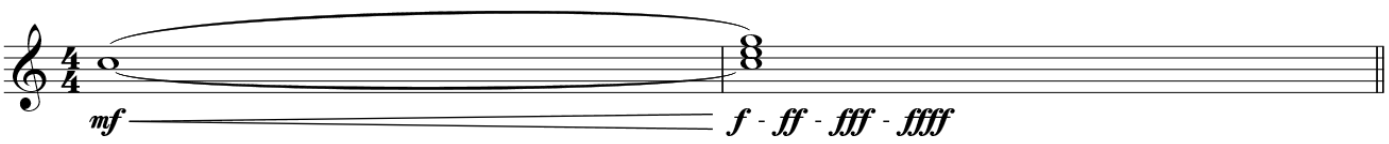
Cichowicz, Vincent. *Flow Studies* no. 1:

Allow the air to move smoothly. Maintain consistent tone quality through the registers. When breathing, omit an entire note and air-attach the next rather than attempting to stagger-breathe within a single half note.



9-Count Tone Crescendo Chord Exercise

First-part players move to the G, second-part players to the E, third-part players stay on the C.



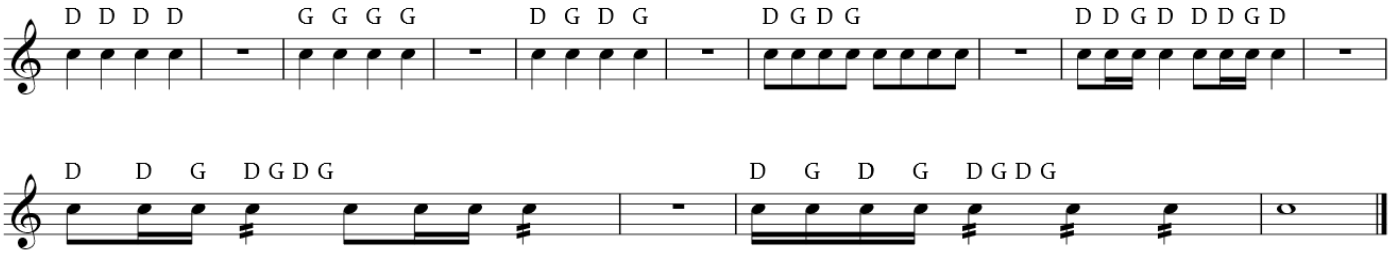
Multiple-Tonguing

The Back of the Tongue

We may also use the back of the tongue to articulate in alternation with the front of the tongue. In general, use a **"gAh" or "gOh"** syllable to alternate with the "dAh" or "dOh", and a **"kAh" or "kOh"** syllable in cases when alternating with "tAh" or "tOh". Note that the approach to air and resonance is identical regardless of the usage of the tongue. When multiple-tonguing, strive for **evenness** of articulation by making the back of the tongue sound just as crisp and immediate as the front of the tongue. When double-tonguing, the front and back of the tongue will alternate. When triple-tonguing, use a DGD DGD or DDG DDG pattern of alternation as defined depending on context.

Developing Multiple-Tonguing

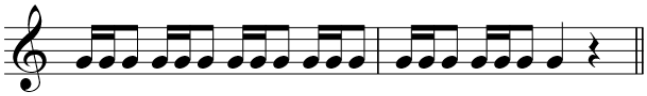
Prioritize **quality over speed** when practicing using the back of the tongue – establish good technique and then layer in variables of speed, rhythmic patterns, and melodic motion.



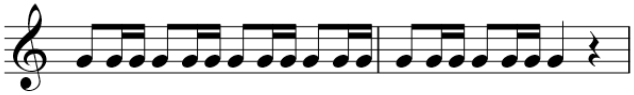
Multiple-Tonguing Exercises

These variants may be applied to 8- or 9-count Tones to turn them into multiple-tonguing exercises:

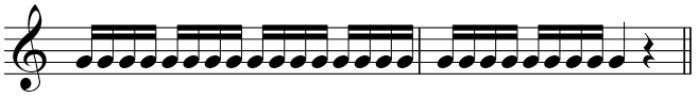
8-count Tone; Double-tongued Downbeats



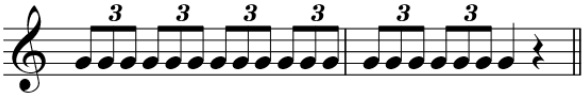
8-count Tone; Double-tongued Offbeats



8-count Tone; Continuously Double-tongued

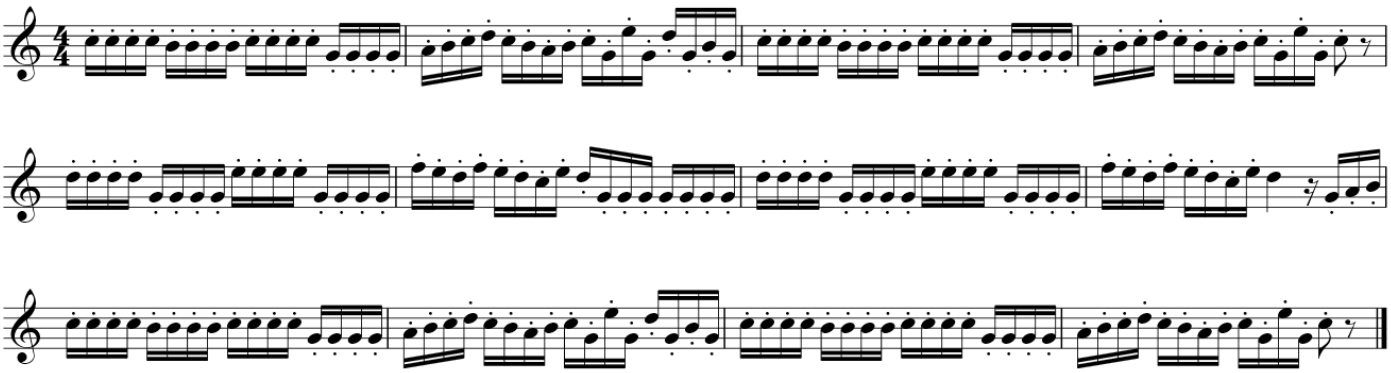


8-count Tone; Triple-tongued



Goldman Exercise

Goldman, Edwin Franko. *Practical Studies*, no. 1



Extension: Exercise Adaptations and Alternate Techniques

Dynamic Exercises

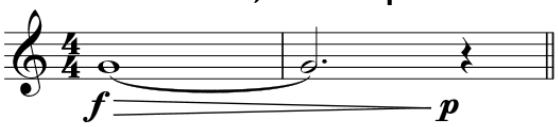
When performing these exercises:

- Move evenly and uniformly between the starting and ending dynamic levels.
- Maintain consistent vowel shape without distortion or pinching.
- Create dynamic motion immediately on the beats where hairpins are marked.

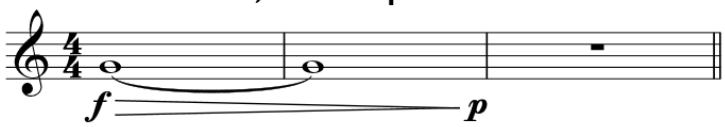
8-count Tone; piano to forte

9-count Tone; piano to forte

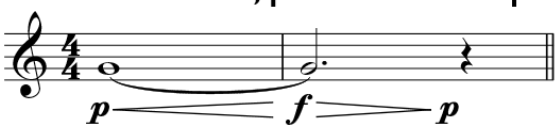
8-count Tone; forte to piano



9-count Tone; forte to piano

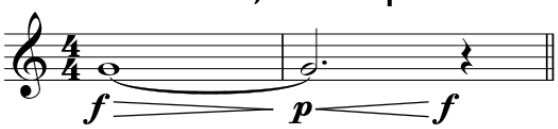


8-count Tone; piano to forte to piano

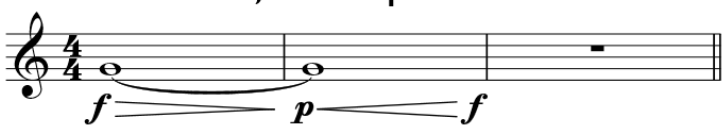


9-count Tone; piano to forte to piano

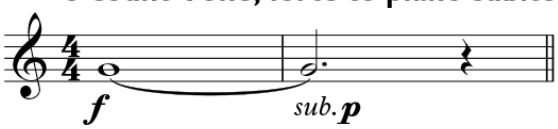
8-count Tone; forte to piano to forte



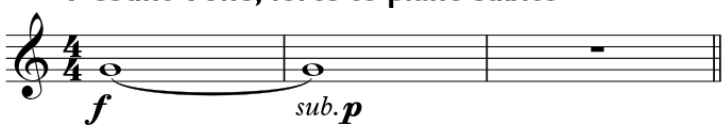
9-count Tone; forte to piano to forte



8-count Tone; forte to piano subito



9-count Tone; forte to piano subito



Bopping

The technique of "bopping" involves articulating the **beginnings** of notes without sustaining through their duration. When bopping, **tongue all notes** with an open-ended staccato, regardless of slurs or other articulation marks. Passages or gestures of rapid slurred notes, generally sixteenth notes depending on the tempo, may be either played as written or reduced to a "check pattern" of rhythmic anchor notes.

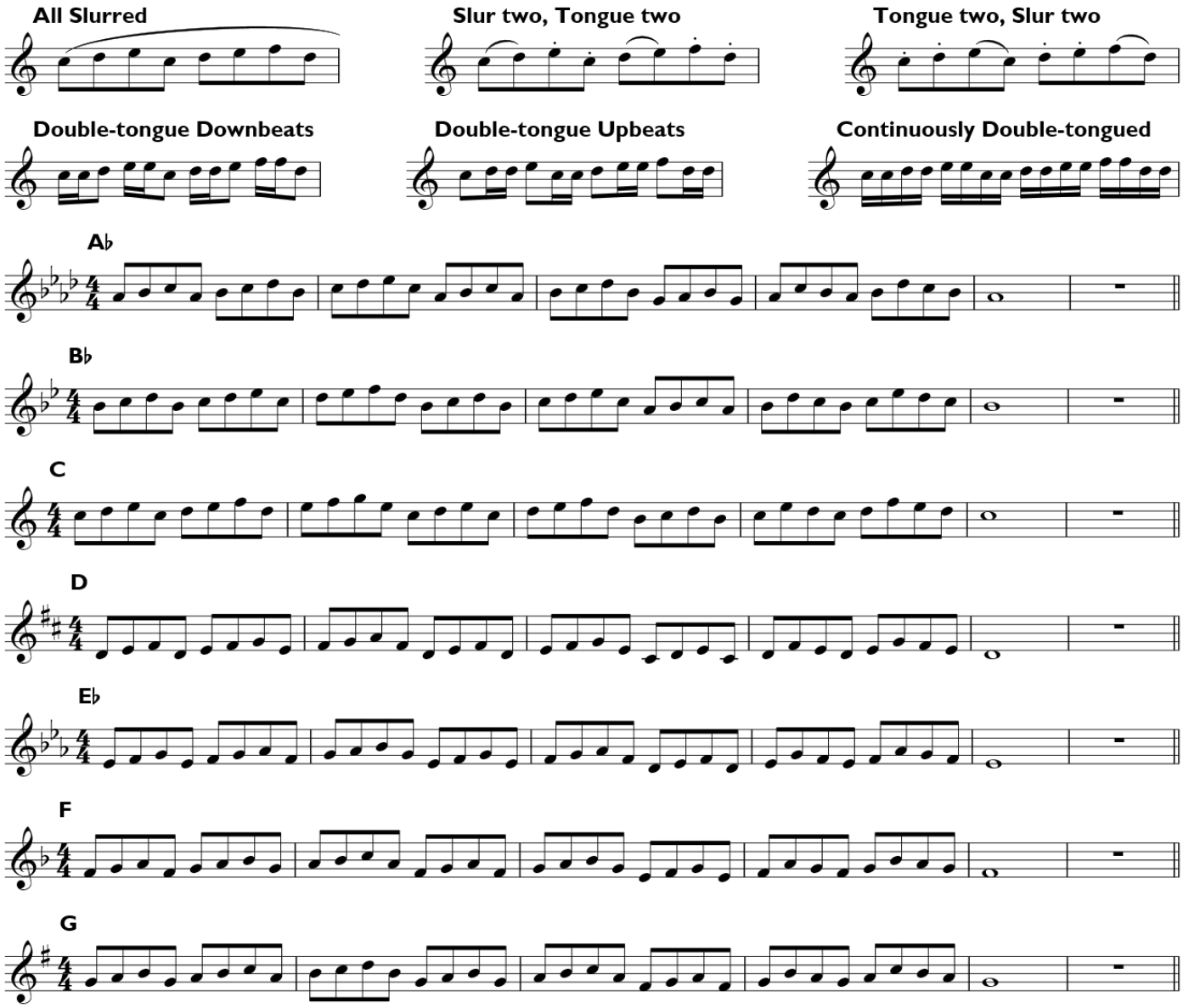
In this technique, everything should be played at a maximum dynamic level of ***mezzo-piano*** (5.0). When playing passages whose range would render control at a soft dynamic level prohibitively difficult, those passages may be bopped an octave lower.

Bopping is tremendously valuable for checking rhythmic interpretation: it isolates and exposes both **tempo**, the speed of the beats at which players are moving, and **timing**, the placement of events within the tempo.

Clarke Studies

Clarke, Herbert L. *Technical Studies*, Second Study:

The exercises may be varied as shown or in some other manner. Maintain even tone and consistent air stream.



Foghorn

To set up for the foghorn technique, remove your main tuning slide completely. By buzzing into the mouthpiece as normal and finding low/medium/high partials, timbral and pitch consistency can be established across a section.

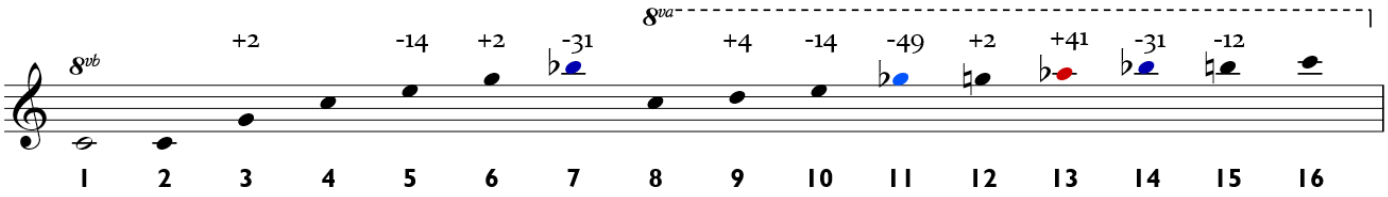
This technique may also be used for warm-down embouchure therapy, by adjusting the embouchure to place as much flesh as possible within the cup of the mouthpiece and then playing soft low tones.

Tuning

The Harmonic Series

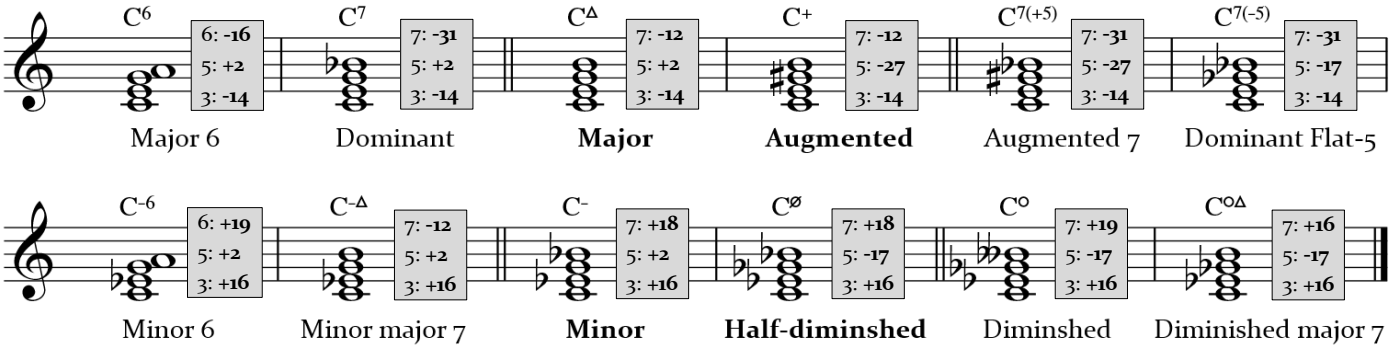
The open pitches on a brass instrument are the partials of the physical **harmonic series**, as the integer multiples of the frequency of the instrument's fundamental pitch. The chart below indicates where the notes of the pure harmonic series lie in relation to the equal-tempered scale, with the octave divided up into twelve equal semitones.

On a brass instrument, each partial will follow the tendencies of the open series note; thus, notes built off of the 5th partial will tend slightly flat, while notes built off of the 7th partial are significantly flat and thus generally avoided.



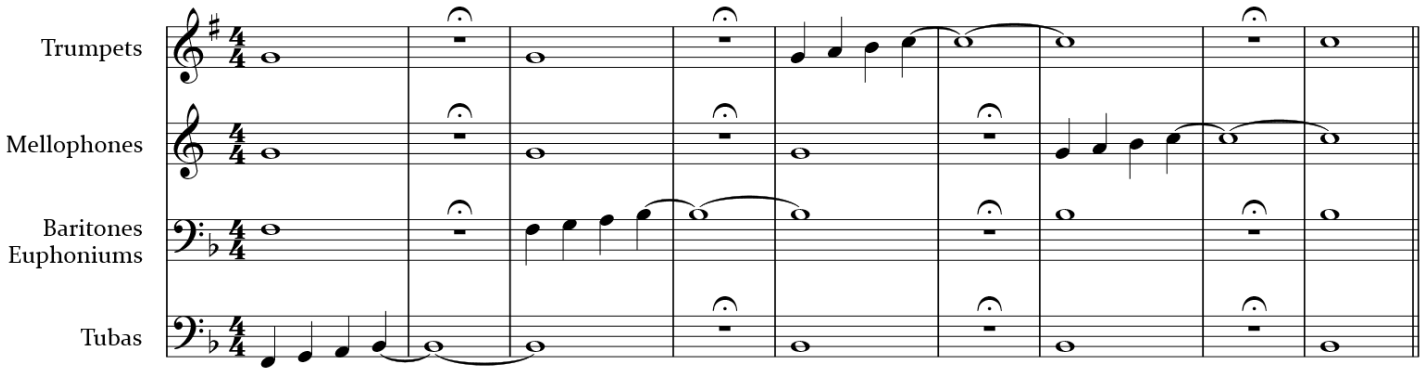
Chord Adjustments

Required adjustments are given in cents (hundredths of a semitone) from equal temperament, assuming that the root is not adjusted.



Tuning Sequence

This sequence is generally used to verify ensemble intonation after individual tuning is complete. Play in the center of your horn and make small adjustments as needed to the instrument rather than the embouchure.



Appendix A: Required Equipment

Mouthpiece

Mouthpieces used by the Pacific Crest hornline are as follows:

- Trumpets: 3C
- Mellophones: Hammond 6MP
- Euphoniums: Hammond 12L
- Tubas: Conn Helleberg Silver Standard

Members who are contracted will eventually purchase mouthpieces through the corps, except for trumpets. Applicants are not expected to acquire the standard mouthpiece before being offered a position.

Tuner and metronome

You must have a tuner and a metronome at every brass rehearsal. Tuner applications on phones can be effective for individual practice, but objects of substantial value are not a good fit for the outdoor conditions of drum corps rehearsals. Inexpensive and durable combination models may be purchased online or at music stores.

Three-ring binder

This manual, all distributed music, and any document you would need as a quick reference should be printed out and kept in your three-ring binder. Use clear sheet protectors to shield your music from the elements and enable quick substitution of replacements.

Pencil

It is extremely important that every brass ensemble member have a pencil at all times. Any changes or redefinitions should be noted down as soon as possible. The more details you document, the more details you will remember!

Black towel

The black towel is used to protect your instrument when placed on hard surfaces, especially outdoors. For trumpets, mellophones, baritones, and euphoniums, a hand towel is sufficient; tubas will need a bath towel. It is a good idea to have an extra towel on hand in case your regular towel is mislaid.

Water cooler

Contracted members of the Pacific Crest hornline should acquire a blue Coleman 1-gallon water cooler. Be sure to label it with your name. All members and applicants should ensure that they have water at every rehearsal, and that their containers are filled before each rehearsal begins.

Clothing and Shoes

You must wear clothing and shoes that will allow you to perform expanded and expressive movements freely. T-shirts, shorts, sweats, or other athletic apparel are good choices. Jeans are not appropriate for rehearsal.

A properly-fit pair of tennis shoes or cross-trainers that provide stability on both the inside and outside of the foot are indispensable. Running shoes can be good choices as well, but be wary of minimalistic running shoes, as their meagre support is not a good match for the drum corps activity. Sandals, shower shoes, flip-flops, or bare feet are not appropriate footwear for rehearsal.

Baseball cap

When rehearsing indoors, hats are optional. When outdoors, you must have a hat that keeps the sun from your head and your face. Visors or beanies do not serve the complete purpose of this requirement and are not appropriate rehearsal headwear.

Gloves

Gloves must be worn when handling any brass instrument belonging to Pacific Crest to help protect and maintain them in good condition. Gloves that are dirty or that have worn through will accelerate the tarnishing and wear on the instrument, and are never acceptable. You will go through many gloves during the season. Plan to clean or replace them as necessary so that the gloves you are using at any time are always in good condition.

Appendix B: Sample Practice Organizer

Before Practice

ENVISION: What does success sound like today? What do you intend to accomplish today?

_____

_____

What challenges do you anticipate as you **PERFORM** the material?

_____

_____

_____

_____

_____

During Practice

ASSESS: What differences do you hear in how you are performing vs. how you **ENVISIONed** a perfect performance?

_____

_____

_____

DIAGNOSE: What are the underlying causes of this discrepancy? **PRESCRIBE**: What are some practice strategies or skills to isolate that may address these problems?

_____ / _____

_____ / _____

_____ / _____

_____ / _____

_____ / _____

After Practice

After you **IMPLEMENT** these plans: to what extent were you successful in achieving your goals for today?

_____

_____

_____

_____

What is the "next step" in improving the skills or music you worked on today?

_____

_____

Before Practice	**During Practice**	**After Practice**
What do you intend to accomplish today?	How is what you hear from your instrument different from what you hear in your head? List these spots or challenges:	To what extent did you accomplish your goals today?
What challenges do you anticipate? Have you used any strategies that have been successful in addressing these challenges?	What strategies are you using that you expect to work? Are they, in fact, working?	What is the "next step" in improving the skills or music that you worked on today?

Notes: Was today a particularly successful or particularly challenging day? If so, why do you think this was the case?

_____

_____

_____

_____

_____

_____