

Multiphonics Cheat Sheet

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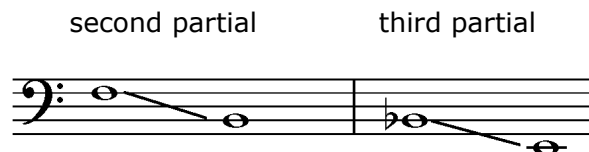
Sound Production: Making the Multiphonic Sound

Multiphonic sounds pass through the mouthpiece and instrument. Therefore, produce multiphonics by **singing through the mouth and not by humming through the nose**. Give it a try: while sustaining any bass clef pitch on the trombone, sing simultaneously. Start with a played pitch and add any pitch in the voice.

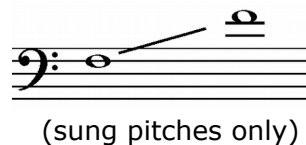
Next, use glissandi in the voice while sustaining played pitch to get acclimated to various feelings of resistance. As you familiarize yourself with this resistance, experiment with the speed of vocal glissando - start slowly then gradually accelerate rate of change. Observe what occurs.

It's easier to produce a good multiphonic sound while playing in the mid-range. **Second and third partials**, the sweet spots of the trombone, offer two characteristics: least resistance to the sung pitch and greatest potential for that rich, multi-layered overtone sound.

Second partial (Bb to E) and third partial (F to B) pitches in slide positions one through seven.



Vocal range in multiphonics varies widely. However, the following vocal range, F3 to F4 inclusive, is common to nearly everyone regardless of the individual's range:



Multiphonic Playing

Even when done properly, sung multiphonics can lead to vocal strain due to its extremely unorthodox vocal technique. It is indeed necessary to sing near one's top volume most of the time. Additionally, wave patterns in the voice and trombone create interference patterns that bounce back against the embouchure and vocal cords.

The Voice

Vocal Cord Health

Even ten minutes of continuous multiphonic practice can put a high amount of strain on vocal cords. Vocalists normally sing with their mouths wide open. The trombone's small aperture creates tremendous resistance for the voice to push through so it works extra hard to balance. The added volume required to match dynamics with trombone can create vocal strain.

Optimal Vocal Care Checklist

- **Hydrate, hydrate, hydrate!** Drink water throughout the day, starting in the morning; it maximizes the body's efficiency to stay hydrated. Drinking water can soothe irritated vocal folds that get rubbed together abrasively during multiphonic playing.
- Add lemon/lime to water
- Avoid/reduce all dairy
- Don't smoke
- Wear a scarf and keep your neck/mouth covered in cold weather
- For a sore throat or cough: gargle with warm salt water, use natural cough drops (without mentholatum or other medicinal additions that can dry out the throat) and/or licorice.
- Drink herbal tea. I recommend Traditional Medicinal's "Throat Coat" tea. Try honey.

Incorporating Singing During Practice Sessions

Singing is a profound, if not essential, augmentation to instrumental practice. When singing, breathe in the same manner as when playing trombone. Off the trombone, try singing an etude or solo excerpt before playing it on trombone. It's nice to have a piano or pitch reference handy. Sing with a full voice, in tune, and with breath support. Sing like you're in the car or the shower!

Warming up the Voice

- Sing "Mmm" in glissandi throughout mid vocal range. Repeat, singing glissandi with an open-voweled "Ahh," keeping vocal cavity in the shape it has when yawning. Keep jaw relaxed and dropped vertically without tucking backwards (which causes tension). Place palms on either side of your face to check for tension. Relax. Repeat.

Timbre

Harmon Mute Warm Up (about 25 seconds): In one breath, play a soft, controlled note starting in closed mute position. Lift a finger roughly each second, listening for the next harmonic to become prominent. When all fingers are lifted, repeat process in reverse - all in one breath.

Timbre: Vowel Tones

It is helpful to isolate vowel tone practice before adding multiphonics. Vowel sounds such as AH, AY, EE, OH, and U (also ERR) work especially well in the mid-to-low registers (second and third partials) of trombone. The upper register is not nearly as responsive to these vowel alterations. The lower register (e.g. F-attachment and pedal notes) takes some effort to control but can create a unique vowel timbre.

To try: keep tongue in the position it would normally take for any given vowel tone, then squeeze sides of the tongue against teeth (visualize the sides of your tongue as a hammock "hanging" between sides your teeth). These are "hard" vowels (e.g. hard EE or hard OO).

There are many ways to incorporate these didgeridoo tones ("didg tone") with regard to timbre on trombone. One example involves a vowel tone like EE where the sound may be closed or clamped. As always, allow the sound guide you to proper technique – don't use conventional "AH" tone. Another example involves a rhythmic ostinato with vowels, such as *Pipsqueak* (excerpt shown).

Changing Vowel Timbre on a Sustained Pitch

Changing vowel sound on a sustained pitch (OO-AH, EE-OH, AH-OH) also changes its audible overtones. Vowel overtones are only possible with the hardest vowel shapes (e.g. EE) and are most noticeable within a multiphonic fifth or tenth. Unlike harmon muting, it is very difficult to pinpoint exact overtones when using vowel manipulation. Vowels significantly change the overtones heard in multiphonic chords.

Vowel Timbre Exercises

In one breath, say or whisper the following sounds in succession where each syllable transitions seamlessly into the next: AH - AY - EE - ERR - OH - OO. Say them backwards as well, noticing how the tongue and mouth cavity make micro adjustments between each vowel sound.

Repertoire

Multiphonic Etude (I) (by William Lang)

-Near Unisons, Chord progressions, Vowel tone changes

Buoyant Satellite

-Tonal chord progressions, Vowel tone changes, Parallel motion

Neptunian Love Song

-High voice, Wide intervals, Vocal melody over sustained trombone

Pipsqueak (excerpt below)

-Didgeridoo-like vowel ostinato, melody over a rhythmic ostinato

The musical score for 'Pipsqueak' is presented in three systems. The first system is a single bass clef staff in 4/4 time, featuring a rhythmic ostinato of eighth notes with 'x' marks above them. The lyrics are: *ee yah ee yah ee yah yah ee yah ee yah ee yah yah*. The second system begins with a treble clef staff containing a melodic line and a bass clef staff with the same rhythmic ostinato. The lyrics are: *ee yah ee yah ee yah yah ee yah ee yah ee ee-yah ee-yah*. The third system continues with the treble clef staff and the bass clef staff with the rhythmic ostinato. The lyrics are: *ee-yah ee-yah ee yah ee yah ee yah yah ee yah ee yah ee yah yah*.

Exercises

1. Parallel Fifths



Two staves of musical notation for the Parallel Fifths exercise. The first staff contains six measures of music, and the second staff contains six measures. The notation features various intervals and accidentals, including sharps and flats, across the two staves.

2. 10ths



Four staves of musical notation for the 10ths exercise. The notation is complex, featuring many accidentals (sharps and flats) and slurs, indicating a challenging exercise for the student.

3. Close intervals / voices switch



Two staves of musical notation for the Close intervals / voices switch exercise. The notation shows intervals and voice switching across the two staves, with various accidentals and note values.