Saxophone without mouthpiece

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Chapter 3
Tongue Ram

3.1 - Description of Technique - https://youtu.be/y8T0yWYQT0I

The tongue ram technique involves forcefully inserting the tongue directly into the aperture hole of the saxophone neckpiece. [Plays an improvisation using the tongue ram technique]. The resulting sound comes from the vigorous forcing of air into the body of the saxophone by the tongue, creating a hollow-like sound that subsequently resonates through the length of the saxophone tube. This sound is similar to the slap technique produced by common practice saxophone playing. The tongue ram technique can produce rather violent sounds. This is due to the force of the air needed before the tongue is forced into the neckpiece. The rush of air before the actual tongue ram is, in fact, an air pitch sound. This air pitch can be shortened somewhat so that the only perceivable sound is that of the tongue ram. [Demonstrates]. However, a degree of air sound will always be present.

3.2 - Technical Parameters - https://youtu.be/FU9QTYw5U-o

Transposition:
Without the mouthpiece, the pitch is detuned from common practice playing. Additionally, with all SWMP techniques, it is impossible to determine a standard and all-encompassing transposition. However, a transposition chart for each saxophone, soprano, alto, tenor, and baritone, is provided below this main video.

Range:
Like the air pitch technique, the range of the tongue ram technique is limited. This is because the use of the octave key does not affect the pitch. Starting from the lower tessitura the range begins with B♭3 (or A3 on baritone) and extends chromatically upward to C#5. [Demonstrates range]. From here, I skip the normal fingering for D5 and instead use the C1-5 side keys (or to C6 on soprano) to extend the range by a further major third (or a perfect fourth on soprano). [Demonstrates range]. This extension is achieved without using the octave key. The full range of the tongue ram technique on alto saxophone would then be: [plays full range].

Discussion:
Performers, composers, and researchers can draw parallels between the tongue ram and other contemporary techniques. Firstly, there are two techniques from standard saxophone practice that evoke inspiration and imitation: the slap tongue and the common practice tongue ram. With the mouthpiece, the typical popping sound of the slap tongue is reminiscent of the SWMP tongue ram technique despite their very different means of production. [Demonstrates].

The tongue ram technique can also be produced with a mouthpiece, and it is referred to by the same name. This may cause confusion in determining whether it is intended with or without a mouthpiece; in addition to clear distinctions in notation, succeeding and

preceding musical events should give a clear context for the performer to decide what is needed. In *The Techniques of Saxophone Playing*, Weiss and Netti comment on both option as if they were the same due to their similar means of production, despite them leading to completely different sonic results (Weiss and Netti 2010: 148). Although the actions are similar, the tongue ram with a mouthpiece yields a significantly weaker sound due to the smaller opening the air is forced into.

There are stronger parallels with contemporary flute techniques sharing the same name. The means of production is also very similar. Kientzy posits the historical standpoint that the common practice slap technique served as a catalyst for the tongue ram technique among flutists, subsequently influencing saxophonists to emulate the flute's tongue ram: "[The tongue ram] is the mode of playing that flutists use to imitate the slap technique of saxophonists" (Kientzy 2007: 475). In their contemporary guide, *The Techniques of Flute Playing*, Carin Levine and Christina Mitropoulos-Bott elucidate three approaches to employing the tongue ram technique. The second is interesting for my discussion here. According to Levine and Mitropoulos-Bott, in this approach "the embouchure hole is completely covered with the lips [...] [and] with a strong thrust of air, the tongue is propelled into the embouchure hole where it is stopped" (Levine and Mitropoulos-Bott 2003: 28). This is the same method of production used by saxophonists.

According to Weiss and Netti, the tongue ram is the "staccato of 'alla tromba' playing" (Weiss and Netti 2010: 149).[36] However, this assessment seems only partially correct. Fundamentally, the tongue ram and trumpet sounds techniques are related because they both exploit the closed-end air column properties of the saxophone tube. The tongue ram is essentially the undeveloped fundamental harmonic of the trumpet sounds technique. However, after examining the sonic material from these two techniques, there are distinguishable discrepancies in the resultant pitches. For example, on the alto saxophone, the F4 fingering produces a sounding A3 plus a quarter-tone with the tongue ram technique. With trumpet sounds, the same fingering produces a G#3 plus an eighth-tone. Let me demonstrate that for you. [Demonstrates difference]. A performer or composer would have to ignore this microtonal difference to understand Weiss and Netti's claim that the tongue ram technique is simply the staccato of the trumpet sounds technique. However, imagining the tongue ram technique as the staccato of trumpet sounds is useful despite the inherent pitch differences. Saxophonists can leverage this to gain insights into the specific pitch they should target when employing the trumpet sounds technique. (Consult the transposition charts for each technique to ensure accuracy).

While the tongue ram technique remains effective across all saxophones, it is noteworthy that, as the tessitura ascends, the resulting sound tends to diminish in strength. The decrease in diameter and length of the saxophone tube as the register ascends is the

[36] 'Alla tromba' in Italian means 'like a trumpet' or 'on a trumpet'. This indicates that a player needs to buzz their lips and play the saxophone as if it were a trumpet. For further information on the trumpet sounds technique, please refer to Chapter 4.

contributing factor to the diminishing sound in higher registers. Both Kientzy (Kientzy 2007: 475) and Weiss and Netti (Weiss and Netti 2010: 148) express a similar viewpoint, suggesting that the tongue ram technique is most effective when applied to the lower registers. Kientzy asserts that the tongue ram technique exhibits greater effectiveness on larger saxophones (Kientzy 2007: 475). While this evaluation holds true in general, it should not dissuade composers from incorporating the tongue ram technique with alto or soprano saxophones.

3.3 - Performance and Practice - https://youtu.be/2MbgUF3wyuM

To execute a successful tongue ram, a performer should initially cultivate proficiency and flexibility with the air pitch technique. To produce the desired sound, a short burst of air is required behind the tongue ram. This burst provides the necessary speed and pressure for the tongue to forcefully jam and slap itself into the aperture of the neckpiece. The resulting sound is influenced by the specific keys that are depressed during the execution of the technique.

Dynamic Range:
The tongue ram technique can generate a broad dynamic range from *ppp-mf*. [Demonstrates dynamic scaling].

This dynamic range will vary widely depending on the saxophone. Broadly speaking, the baritone, with its larger and more resonant tube will resonate louder than the soprano saxophone with its smaller tube. However, the dynamic output primarily hinges on the force of the tongue and the air pressure behind it. Consequently, a high-pressurized tongue attack will yield a louder dynamic, while a low-pressure tongue attack will result in a weaker sound. In addition, an audible sympathetic air pitch sound always accompanies the tongue ram attack, with its dynamic mirroring that of the tongue ram or being slightly louder.

Speed of Articulation:
Artistically, this technique is an effective replacement of the slap sounds. However, the physicality of the technique is more demanding since the tongue must be retracted from the aperture of the neckpiece for each articulation. Due to this additional movement, the tongue ram technique should not be employed in extremely fast passages. [Demonstrates].

3.4 - Personal Development - https://youtu.be/R89jZZ-cQHg

Much like practicing other techniques, especially various articulations, a performer should start by slowly exploring repeated single pitches on one note. Focus on the position of the tongue, how it interacts with the aperture of the neckpiece, and discover the dynamic limits of that particular pitch.

Personally, I would start on the lowest pitch of the saxophone – here, the resultant sound is quite present. Since I am using an alto saxophone, I will begin on the low B♭. Play four tongue rams at a slow yet consistent tempo with a *mezzo-forte* dynamic. Focus on how your tongue feels entering the aperture of the neckpiece and notice how much of that air pitch is needed to propel the tongue forward. As a practical tip, keep the tongue tight and pointed for better entry into the aperture, resulting in an overall improved tone quality of the tongue ram. Here I will demonstrate this low B♭. [Demonstrates].

After exploring the low B♭, I recommend working up chromatically through the saxophone. Note the weaker dynamic sound result when moving to higher tessituras. When reaching the higher tessitura using the palm keys, spend extra time refining the balance between the dynamic of the tongue ram and the accompanying air pitch sound. I will demonstrate here the palm key D. [Demonstrates]. Once one has a functional understanding of how the tongue works and of the balance between ramming and air pitch sounds, try the same exercise in different dynamic ranges.

After gaining a thorough understanding of how the tongue functions with this articulation, I recommend speeding up the movement of the tongue. Stay on the same pitch, and this time, start with standard articulation exercises to build speed. Utilize a metronome set to 40 beats per minute and articulate first in quarter notes, then eighth notes, followed by triplets, and finally sixteenths. [Demonstrates]. Taking a slow pedagogical progression, add two clicks per minute and increase the metronome to 42 beats per minute. [Demonstrates]. One can continue this process until encountering difficulty. Reduce the metronome to a tempo marking lower and practice until the tongue movement becomes faster. Performers can gradually increase the metronome speed as their comfort level grows.

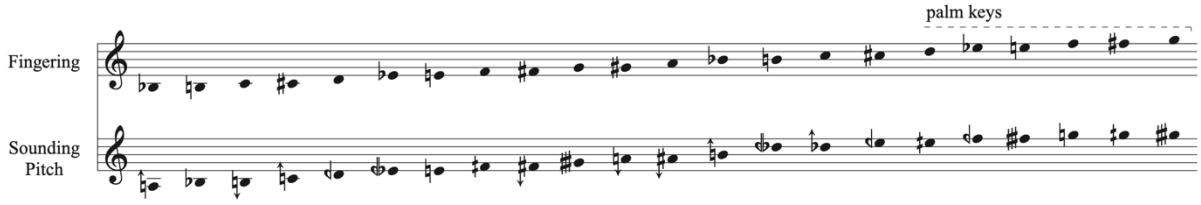
Then, I recommend practicing with full-range scales. Begin with B♭ Major as an example, starting from the lowest pitch of the saxophone. Start at a slow pace and gradually increase the speed. To demonstrate, I will use a metronome set at 40, beginning with eighth notes. [Demonstrates]. Practice this approach with all scales, gradually working up the tempo.

3.5 - Pedagogy - https://youtu.be/_7c31dVxbjA

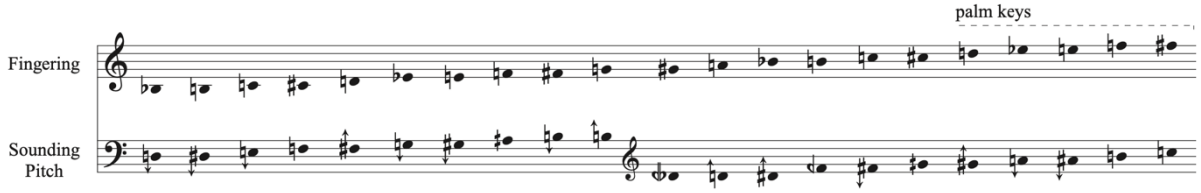
If necessary, adjust the neckstrap to the proper height so that the neckpiece is aligned with the mouth. [Demonstrates]. Prepare the desired fingering. [Demonstrates]. Align the lips with the aperture of the neckpiece and prepare the embouchure. [Demonstrates]. Breathe in. [Demonstrates]. And, upon exhaling, forcefully jam the tongue through the opening of the neckpiece. [Demonstrates].

3.6 - Transposition Charts for Tongue Ram

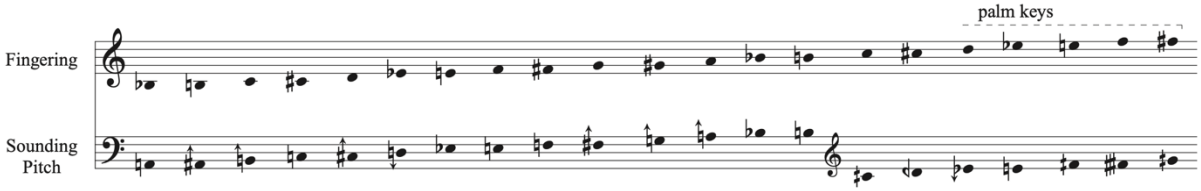
Soprano Saxophone



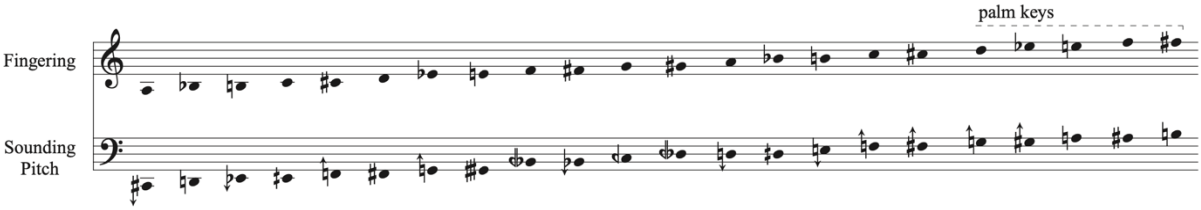
Alto Saxophone



Tenor Saxophone



Baritone Saxophone



3.7 - Demonstration Videos for Tongue Ram

Below, I will demonstrate the tongue ram technique on all four main saxophones, showcase various transitions with other SWMP techniques, and perform it in combination with common practice saxophone playing. Each video is accompanied by a brief text for further elaboration.

Chromatic Scale Played on Soprano, Alto, Tenor, and Baritone Saxophones:
https://youtu.be/14gPxh8Cgl0
Here, I demonstrated the tongue ram technique on all four primary saxophones performing the full chromatic range for each saxophone. Notice the difference in dynamic between the smaller and larger saxophones.

Tongue Ram in Combination with Other SWMP Techniques:
Since the tongue ram is a single-event articulation, combining it with other modes of playing is achieved by chaining one event to the next. Unlike the other SWMP techniques, which can be prolonged for any duration at the performer's discretion, the tongue ram has a short duration.

Tongue Ram to Trumpet Sounds:
https://youtu.be/vaE_rOTCpq8
The tongue ram technique can be seamlessly integrated with the trumpet sounds technique. Although the pitch of the tongue ram closely aligns with that of the trumpet sounds, there are discernible differences in the same fingerings between these two techniques. To help develop the trumpet sound pitch, a saxophonist can utilize the tongue ram as a close reference for the fundamental pitch of the trumpet sound. Compositionally, it is crucial to approach the tongue ram technique as distinct from that of trumpet sounds, although swift transitions between these two techniques are feasible.

Tongue Ram to Air Pitch:
https://youtu.be/MzGu2tW3gEk
Combining tongue ram and air pitch techniques is relatively straightforward, given that the air pitch technique precedes and accompanies the tongue ram. Allowing a moment for the tongue to retract from the neckpiece is essential for a successful execution of the air pitch following a tongue ram articulation.

Tongue Ram to Saxo-Flute Hybridity:
https://youtu.be/zITKs2Y-EZI
The main challenge in combining the tongue ram technique with saxo-flute hybridity is the need to reposition the entire saxophone body and neck. The saxophonist must find the correct angle to blow across the aperture hole of the neckpiece for the saxo-flute hybridity technique. While this adjustment can be achieved with dedicated practice, it is advisable to allow the performer several seconds to position the saxophone correctly.

Tongue Ram to Normal Playing:
https://youtu.be/mCFk4_Ll5Bw
While combining any SWMP technique with playing using the mouthpiece is feasible, there are a few important factors to consider. The first is the transition time required to reattach the mouthpiece. Allow the saxophonist approximately five to ten seconds to pick up their mouthpiece, properly place it on the saxophone, potentially adjust the neckstrap, and prepare themselves to play with the mouthpiece again. This pause can be utilized to create a sense of musical drama through silence or by considering the taking off or placing back of the mouthpiece as a theatrical element. Alternatively, a composer can introduce a transition of different musical materials and techniques.

The second consideration is the possibility of the mouthpiece making a sound as it rubs against the cork of the neckpiece. While applying cork grease before the performance may alleviate this noise, it is not a foolproof solution. However, it could also offer a new sonic element and be heard as aesthetically interesting. A third factor to note is the tuning of the instrument after placing the mouthpiece back on. This is generally not a significant problem because experienced saxophonists will intuitively know where to position the mouthpiece for proper tuning. However, it is crucial to be aware that relying solely on intuition is not infallible. Therefore, if intonation is important, it is advised to have the saxophonist take a moment to retune when they return the mouthpiece to the neckpiece.

3.8 - Pitch Manual for Tongue Ram

Soprano Saxophone							
Fingering	**Test 1 (Hz)**	**Test 2 (Hz)**	**Test 3 (Hz)**	**Test 4 (Hz)**	**Average (Hz)**	**St Dev (Hz)**	**Musical Notation**
A#3 / B♭3	222.63	221.28	222.63	222.42	**222.24**	0.65	**A3 plus 18 cents**
B3	232.41	232.33	231.37	233.08	**232.2975**	0.70	**A#3 minus 6 cents**
C4	245.31	245.18	245.95	245.38	**245.455**	0.34	**B3 minus 10 cents**
C#4 / D♭4	260.92	265.15	262.49	266.29	**263.7125**	2.45	**C4 plus 14 cents**
D4	290.29	286.69	286.44	283.28	**286.675**	2.87	**D4 minus 42 cents**
D#4 / E♭4	304.31	303.35	305	306.17	**304.7075**	1.19	**D#4 minus 36 cents**
E4	329.13	325.08	330.37	330.6	**328.795**	2.56	**E4 minus 4 cents**
F4	357.24	358.42	359.61	355.49	**357.69**	1.76	**F4 plus 41 cents**
F#4 / G♭4	367.82	365.16	365.64	365.16	**365.945**	1.27	**F#4 minus 19 cents**
G4	429.99	426.94	427.03	413.22	**424.295**	7.52	**G#4 plus 37 cents**
G#4 / A♭4	436.77	435.07	433.21	431.08	**434.0325**	2.45	**A4 minus 24 cents**
A4	460.19	465.29	459.16	458.4	**460.76**	3.11	**A#4 minus 20 cents**
A#4 / B♭4	487.13	500.96	514.48	484.13	**496.675**	13.95	**B4 plus 10 cents**
B4	545.71	537.08	536.76	550.4	**542.4875**	6.71	**C#5 minus 37 cents**
C5	565.36	573.38	568.3	565.45	**568.1225**	3.76	**C#5 plus 42 cents**
C#5 / D♭5	651.54	639.7	636.25	655.93	**645.855**	9.38	**E5 minus 36 cents**
D5 (with palm keys)	663.95	663.73	662.78	663.55	**663.5025**	0.51	**E5 plus 11 cents**
D#5 / E♭5 (with palm keys)	677.83	674.51	678.24	687.5	**679.52**	5.58	**F5 minus 48 cents**
E5 (with palm keys)	727.61	715.72	716.16	727.29	**721.695**	6.65	**F#5 plus 43 cents**
F5 (with palm keys)	788.25	784.01	785.25	777.4	**783.7275**	4.58	**G5 minus 1 cent**
F#5 / G♭5 (with palm keys)	803.56	X	809.44	801.56	**804.8533333**	4.10	**G5 plus 45 cents**
G5 (with palm keys)	844.67	848.4	857.41	X	**850.16**	6.55	**G#5 plus 40 cents**

Alto Saxophone							
Fingering	**Test 1 (Hz)**	**Test 2 (Hz)**	**Test 3 (Hz)**	**Test 4 (Hz)**	**Average (Hz)**	**St Dev (Hz)**	**Musical Notation**
A#3 / B♭3	146.79	144.44	146.24	145.23	**145.675**	1.05	**D3 minus 14 cents**
B3	154.74	154.87	154.3	154.65	**154.64**	0.24	**D#3 minus 10 cents**
C4	163.83	163.89	163.19	163.15	**163.515**	0.40	**E3 minus 14 cents**
C#4 / D♭4	175.57	175.4	175.07	174.92	**175.24**	0.30	**F3 plus 6 cents**
D4	187.78	186.45	186.24	185.16	**186.4075**	1.08	**F#3 plus 13 cents**
D#4 / E♭4	192.38	193.27	193.78	193.63	**193.265**	0.63	**G3 minus 24 cents**
E4	204.6	204.36	204.17	205.05	**204.545**	0.38	**G#3 minus 26 cents**
F4	226.98	223.33	223.83	224.54	**224.67**	1.62	**A3 plus 36 cents**
F#4 / G♭4	243.65	242.5	242.38	242.78	**242.8275**	0.57	**B3 minus 29 cents**
G4	251.31	251.67	250.61	250.23	**250.955**	0.65	**B3 plus 28 cents**
G#4 / A♭4	273.35	269.18	272.72	273.2	**272.1125**	1.97	**C#4 minus 32 cents**
A4	297.96	297.51	297.98	296.22	**297.4175**	0.83	**D4 plus 22 cents**
A#4 / B♭4	316.57	313.47	312.24	312.78	**313.765**	1.94	**D#4 plus 15 cents**
B4	347	340.72	339.23	337.61	**341.14**	4.11	**F4 minus 41 cents**
C5	368.52	365.73	363.48	364.7	**365.6075**	2.15	**F#4 minus 21 cents**
C#5 / D♭5	397.84	394.17	394.23	393.88	**395.03**	1.88	**G4 plus 13 cents**
D5 (with palm keys)	425.34	410.53	422.02	413.35	**417.81**	7.01	**G#4 plus 10 cents**
D#5 / E♭5 (with palm keys)	434.19	439.3	430.54	430.6	**433.6575**	4.13	**A4 minus 25 cents**
E5 (with palm keys)	462.16	464.7	465.84	461.6	**463.575**	2.02	**A#4 minus 10 cents**
F5 (with palm keys)	494.9	495.02	492.9	494.14	**494.24**	0.97	**B4 plus 1 cent**
F#5 / G♭5 (with palm keys)	521.48	521.88	523.57	520.49	**521.855**	1.28	**C5 minus 5 cents**

Tenor Saxophone							
Fingering	**Test 1 (Hz)**	**Test 2 (Hz)**	**Test 3 (Hz)**	**Test 4 (Hz)**	**Average (Hz)**	**St Dev (Hz)**	**Musical Notation**
A#3 / B♭3	110.4	110.55	110.49	110.56	**110.5**	0.07	**A2 plus 8 cents**
B3	117.38	117.84	117.88	117.81	**117.7275**	0.23	**A#2 plus 18 cents**
C4	124.57	125.86	124.21	124.94	**124.895**	0.71	**B2 plus 20 cents**
C#4 / D♭4	129.41	130.84	129.77	133	**130.755**	1.62	**C3 minus 1 cent**
D4	140.59	139.32	140.24	139.16	**139.8275**	0.70	**C#3 plus 15 cents**
D#4 / E♭4	144.24	148.64	144.7	145.19	**145.6925**	2.00	**D3 minus 13 cents**
E4	155.91	155.37	155.9	155.77	**155.7375**	0.25	**D#3 plus 2 cents**
F4	165.75	165.33	165.91	165.43	**165.605**	0.27	**E3 plus 8 cents**
F#4 / G♭4	174.58	176.21	175.11	175.03	**175.2325**	0.69	**F3 plus 6 cents**
G4	186.89	186.85	186.3	186.58	**186.655**	0.27	**F#3 plus 15 cents**
G#4 / A♭4	198.93	198.66	198.91	198.29	**198.6975**	0.30	**G3 plus 24 cents**
A4	220.47	221.24	221.19	222.46	**221.34**	0.83	**A3 plus 11 cents**
A#4 / B♭4	232.88	231.08	233.12	232.1	**232.295**	0.92	**A#3 minus 6 cents**
B4	246.57	246.2	246.86	246.21	**246.46**	0.32	**B3 minus 3 cents**
C5	269.89	269.11	267.53	267.15	**268.42**	1.30	**C4 plus 44 cents**
C#5 / D♭5	289.92	288.48	288.56	287.82	**288.695**	0.88	**D4 minus 30 cents**
D5 (with palm keys)	307.66	307.2	305.3	305.58	**306.435**	1.17	**D#4 minus 26 cents**
D#5 / E♭5 (with palm keys)	333.5	328.99	328.44	326.5	**329.3575**	2.96	**E4 minus 1 cent**
E5 (with palm keys)	363.49	364.5	362.8	361.62	**363.1025**	1.21	**F#4 minus 33 cents**
F5 (with palm keys)	379.03	379.77	382.4	379.4	**380.15**	1.53	**F#4 plus 47 cents**
F#5 / G♭5 (with palm keys)	403.17	405.98	401.41	403.17	**403.4325**	1.89	**G4 plus 50 cents**

Baritone Saxophone							
Fingering	**Test 1 (Hz)**	**Test 2 (Hz)**	**Test 3 (Hz)**	**Test 4 (Hz)**	**Average (Hz)**	**St Dev (Hz)**	**Musical Notation**
A3	68.77	68.42	68.3	68.51	**68.5**	0.20	**C#2 minus 20 cents**
A#3 / B♭3	73.57	73.77	73.7	73.4	**73.61**	0.16	**D2 plus 5 cents**
B3	76.36	77.32	76.54	76.86	**76.77**	0.42	**D#2 minus 23 cents**
C4	84.04	84.15	84.49	84.32	**84.25**	0.20	**E2 plus 38 cents**
C#4 / D♭4	88.87	87.17	87.44	88.41	**87.9725**	0.80	**F2 plus 13 cents**
D4	92.63	92.66	92.65	92.55	**92.6225**	0.05	**F#2 plus 2 cents**
D#4 / E♭4	100.06	98.68	100.58	99.31	**99.6575**	0.83	**G2 plus 29 cents**
E4	106.18	106.39	106.3	106.57	**106.36**	0.16	**G#2 plus 42 cents**
F4	114.54	114.45	113.12	113.98	**114.0225**	0.65	**A#2 minus 38 cents**
F#4 / G♭4	116.62	115.42	116	115.57	**115.9025**	0.54	**A#2 minus 10 cents**
G4	129.07	128.31	126.6	127.92	**127.975**	1.03	**C3 minus 38 cents**
G#4 / A♭4	136.34	135.33	135.08	135.26	**135.5025**	0.57	**C#3 minus 39 cents**
A4	146.73	145.75	144.55	144.67	**145.425**	1.02	**D3 minus 17 cents**
A#4 / B♭4	150.74	151.14	150.94	150.01	**150.7075**	0.49	**D3 plus 45 cents**
B4	162.69	162.9	163.12	162.56	**162.8175**	0.25	**E3 minus 21 cents**
C5	176.21	175.31	176.6	176.13	**176.0625**	0.54	**F3 plus 14 cents**
C#5 / D♭5	188.52	186.45	185.23	185.85	**186.5125**	1.43	**F#3 plus 14 cents**
D5 (with palm keys)	197.21	198.71	199.54	196.14	**197.9**	1.52	**G3 plus 17 cents**
D#5 / E♭5 (with palm keys)	206.3	206.75	205.81	206.21	**206.2675**	0.39	**G#3 minus 12 cents**
E5 (with palm keys)	221.68	220.3	221.22	221.54	**221.185**	0.62	**A3 plus 9 cents**
F5 (with palm keys)	233.84	233.44	233.85	233.02	**233.5375**	0.39	**A#3 plus 3 cents**
F#5 / G♭5 (with palm keys)	248.08	248.07	247.45	247.02	**247.655**	0.52	**B3 plus 5 cents**