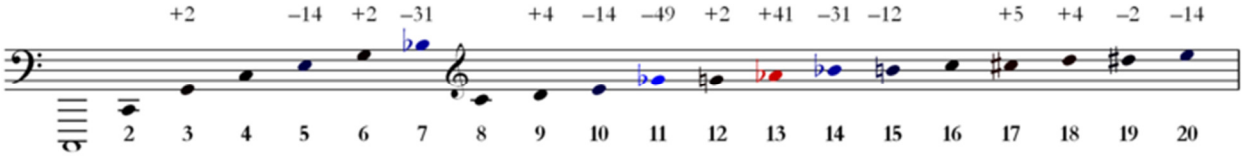
# Fingerings, Part I: Chalumeau
## (or, Cover Down!)

## Why Choose a Fingering?

1) Technical facility
2) Tone
3) Intonation

## General Fingering Principles

As you may have experienced yourself, there aren't too many alternate fingerings for the chalumeau register. As with all instruments, the clarinet is based on the harmonic series:




That is, based on each fundamental fingering you can get multiple different pitches derived from the harmonic series (more on this in a few weeks). However, in the chalumeau register, we are ONLY using the fundamental pitch (equivalent to the lowest C on the diagram above), so we don't have too many options.

Rather, we are left with the other (more intuitive) fingering principle: Shorter tube = higher note. This holds true provided you remain on the same "partial" (that is, note of the harmonic series) – which, as stated, we are.

All of this is a long-winded way of saying that most of the fingerings provided this week will be based on standard fingerings, although there are still a few goodies in there! (Also some really neat effect fingerings, which provide cool timbres but aren't practical for everyday use.)

(N.B. These fingerings are designed and tested for Bb soprano clarinet. Many will work on other clarinets, but some will not. In the future I hope to test out fingering charts for auxiliaries!)

## Covering Down/"Resonance Fingerings"

Since the Boehm-system clarinet (what we all use) was designed before modern acoustical studies, the clarinet is not acoustically perfect. Translated, this means that some notes are out of tune. (Big surprise!) This is particularly a problem in the throat tones – notes here tend to be sharp. What to do? Cover down!

Basically, the idea is to "shade" the note by putting down fingers lower on the clarinet. This will affect pitch somewhat, but (perhaps more importantly?), it will make the tone of the pitch "darker" (has fewer high overtones from the harmonic series) and therefore sound more blended and in tune. I have provided several covered fingerings (from the great Ricardo Morales), but please feel free to experiment and see what works for you and your instrument!

## Intonation Charts

On that note… To get the most out of these fingering charts, you should know where your instrument naturally sits. Grab a tuner, a friend, and a piece of graph paper. Chart out the notes along a horizontal axis across the page from low E up to whatever. Each box up represents 5 cents sharp; each box down represents 5 cents flat. Play each note at a comfortable mf or f for at least 5 or 10 seconds to let it settle, then have your friend jot down where it sits naturally without adjustment (we tend to unconsciously adjust if we do it ourselves). Now you know where your instrument sits and what you need to do to resist its out-of-tune tendencies!

## Some Notes on the Fingerings

Attached at the end of this handout is a fairly comprehensive chart of chalumeau fingerings. Specific notes on some of the fingerings follow.

Key:
"LetterNumber" is a specific pitch. C4 is middle C, so the E below that is E3 and the E above it is E4. Look up "Scientific pitch notation" for more information.
"Number" is the order in the fingering chart.
Ex. "E3 1" is the first fingering for low E. "G4 4" is the fourth fingering for open G.

N.B.: "Effect fingering" usually indicates it's the bottom pitch of a multiphonic. See if you can balance it with upper pitches!

E3: Don't block the bell, and raise the tongue in the mouth. This note is usually pretty flat.
E3 2: Don't neglect the other pinky key, especially in scales with G#.
E3 3: Save pinky time: If you're going to F3, have the pinky down already.

F#3 3: To lower pitch (not sure why you'd want to, but just in case…)

G#3 2: If you're super-fancy and have a left-hand pinky G# key!

B3 2: My go-to fingering. It brings the pitch slightly down and makes the tone slightly darker. Adding the low E key will make it lower but more muffled. Resonance fingering.
B3 3: Naturally more in tune than B3 1
B3 4: Suitable for ppp. Use very little air. Slightly sharp. Effect fingering.

C4 2: More stable and in tune at f+. My go-to fingering. Resonance fingering.
C4 3: Suitable for ppp. Use very little air. Slightly flat. Effect fingering.

C#4 2: Raises the pitch slightly. More in tune at f+. Resonance fingering.
C#4 3: Suitable for ppp. Use very little air. Slightly sharp. Effect fingering.

D4 2: Slightly brighter. More stable at f+. Resonance fingering.
D4 3: Suitable for ppp. Use very little air. Slightly flat. Effect fingering.
D4 4: Suitable for ppp-mp. Effect fingering.

D#4 2: Some people prefer this when possible to keep motion within the left hand
D#4 3: Also can substitute right middle or ring for index. Successively raises pitch – best to substitute only in technical passages
D#4 5: Slightly higher than D#4 4. Both suitable for ppp. Effect fingerings.

E4 2: Raises the pitch slightly. My go-to fingering. Resonance fingering.
E4 3: Raises the pitch slightly. Brighter tone.
E4 4: Very penetrating, stable tone. Goes slightly flat for me.
E4 5: Suitable for mf-. Direct air low. Slightly flat (try other pinky keys too!). Effect fingering.
E4 6: Most in tune at p. Goes very flat when louder. Effect fingering.
E4 7: Same as E4 6. Very easy to bend down a half-step. Effect fingering.

F4 2: Raises the pitch slightly. My go-to fingering. Resonance fingering.
F4 3: Suitable for p-. Rather flat. Effect fingering.
F4 4: Rather stuffy.
F4 5: Suitable for ppp. Rather flat. Effect fingering.

F#4 2: Good for chromatics!
F#4 3: Deepens the tone a bit. Raises pitch slightly. Resonance fingering.
F#4 4: Suitable for p-. Rather muffled. Slightly sharp. Effect fingering.
F#4 5: Deepens the tone and lowers pitch slightly.
F#4 6: Suitable for mp-. Very resistant. Thin tone. Effect fingering.

G4 2: Resonance fingering. Slightly lower, darker, and more resistant. Good for Sibelius 1 (mvt. 1, m. 10), Brahms 3 (mvt. 1, mm. 23-24, m. 36), *Première Rhapsodie* (m. 2, m. 14)
G4 3, 4: Resonance fingering. Dark, clear, focused, good for transitions. Good for *Shepherd on the Rock*, Weber *Variations* (m. 13), Brahms 3 (mvt. 1, m. 23, m. 35)
G4 5: Resonance fingering. Similar to G4 3 & 4, but easier transitioning to clarion
G4 6: Suitable for mp-. Stuffy, thin, resistant. Effect fingering.
G4 7: Suitable for mf-. Fuller but still resistant. Effect fingering.

G#4 2: Resonance fingering. Clear, powerful, versatile. Good for Nielsen (1st solo), Shostakovich 1 (mvt. 1, 3 after rehearsal 1; mvt. 2, 5 after rehearsal 1)
G#4 3: Resonance fingering. A good standard that slurs well and matches color with clarion. Good for *Première Rhapsodie* (m. 5), *Miraculous Mandarin* (m. 14 onwards)
G#4 4: Resonance fingering. Similar to G#4 2. Good for Brahms 3 (mvt. 1, m. 36 on Bb)
G#4 5: Resonance fingering. Somewhat duller. Easier to transition to clarion.
G#4 6: Resonance fingering.
G#4 7: Pretty flat, but good in combination with F#4 2
G#4 8: Very penetrating.
G#4 9: Suitable for p-. Stuffy, thin, resistant.
G#4 10: Suitable for mp-. Surprisingly mellow and flexible. Effect fingering.
G#4 11: Rather flat. Suitable for pp-. Effect fingering.

A4 2: Resonance fingering.
A4 3: Resonance fingering. Good with G#4 3. Warm. Transitions well to clarion. Good for *Petite Pièce* (m. 1), *Première Rhapsodie* (m. 12), Beethoven 6 (mvt. 1, mm. 291-297; 477, 480-481)
A4 4: Resonance fingering. Similar to A4 3.
A4 5: Resonance fingering. A little sharper than A4 3. Slurs well to B4 and C5. Good for Weber *Concertino* (Introduction)
A4 6: Resonance fingering. Similar to A4 5.
A4 7: Resonance fingering. Dark, clear. Slurs well to clarion. Stable intonation. Flexible color. Good for Finzi *Five Bagatelles* (mvt. 2, m. 1), Brahms Sonata 2 (mvt. 1, m. 1), Weber 1 (mvt. 2, m. 1), *Tosca, E Lucevan le stelle* (solo)
A4 8: Resonance fingering. Similar to A4 7. Good for Brahms 3 (mvt. 2, m. 1); *Symphonie Fantastique* (mvt. 3, 5 after rehearsal 43)
A4 9: Resonance fingering. Great for delicate, soft dynamics. Good for Finzi (mvt. 2)
A4 10: Resonance fingering. Brighter timbre. Stable pitch. Good for Beethoven 6 (mvt. 5, mm. 3-4)
A4 11: Resonance fingering. Similar to A4 5, but may be easier to get to. Good for Beethoven 6 (mvt. 3, mm. 124-125), Shostakovich 1 (mvt. 1, 2 after rehearsal 1)
A4 12: Resonance fingering. Somewhat more resistant.
A4 13: Suitable for mp-. Very resistant. Muffled. Effect fingering.

A#4 2: Resonance fingering. Lowers pitch.
A#4 3: Resonance fingering. Lowers pitch.
A#4 4: More penetrating tone, generally better in tune. Sometimes awkward in context, though.
A#4 5: Resonance fingering for A#4 1.
A#4 6: Resonance fingering for A#4 4.
A#4 7: Resonance fingering. Good standard fingering. Works well with G#4 3 and A4 3. Good for *Première Rhapsodie* (m. 5)
A#4 8: Resonance fingering. Clear, in tune, stable. Good for Sibelius 1 (mvt. 1, m. 5), *Tosca, E lucevan le stelle* (solo)
A#4 9: Resonance fingering. Warm. Sharper than A#4 8 & 10, but blends well
A#4 10: Resonance fingering. Clear. Also try based on A#4 4. Good for Shostakovich 9 (mvt. 2, m. 8, m. 10), Sibelius 1 (mvt. 1, m. 12), Weber 1 (mvt. 1, m. 86)
A#4 11: Resonance fingering. More delicate than A#4 10. Good for Brahms Sonata 1 (mvt. 3, opening)
A#4 12: Resonance fingering. More resistant and lower in pitch.
A#4 13: Resonance fingering.
A#4 14: Suitable for mp-. Harsher tone. Effect fingering.

B4 1: Surprise! You can play this in the chalumeau register!
B4 2: Slightly sharper than B4 1.
B4 3: More muffled than B4 2.

C5 1: Surprise! You can play this in the chalumeau register!

## Some Notes on the Trill & Tremolo Fingerings

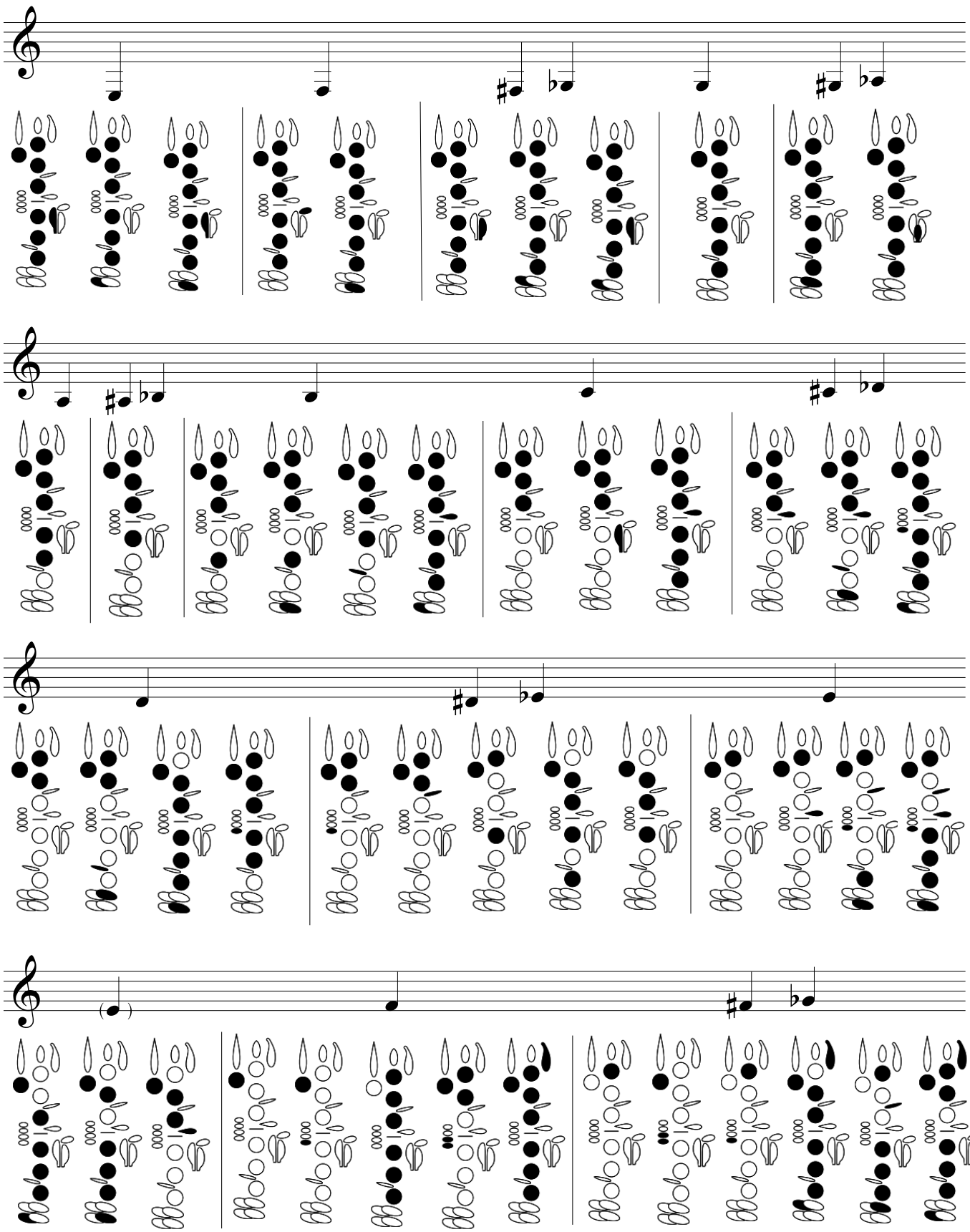
This chart is organized ascending by lower pitch, then by upper pitch. The red areas are the fingers that move.

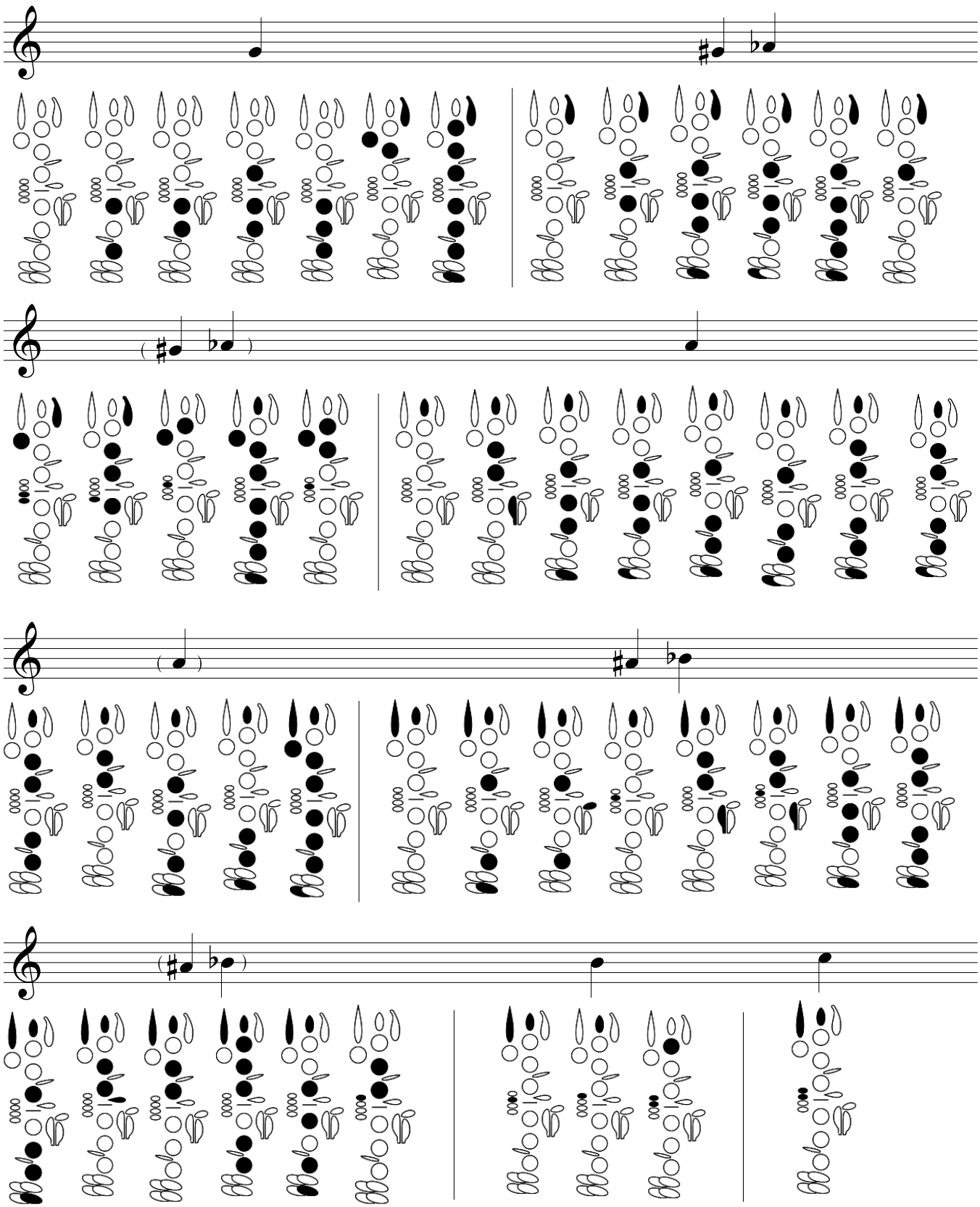
C4-Eb4: This is a weird one. With your left index finger, hold down the little pad between the first and second rings while covering the tone hole. Then trill the middle and ring fingers.

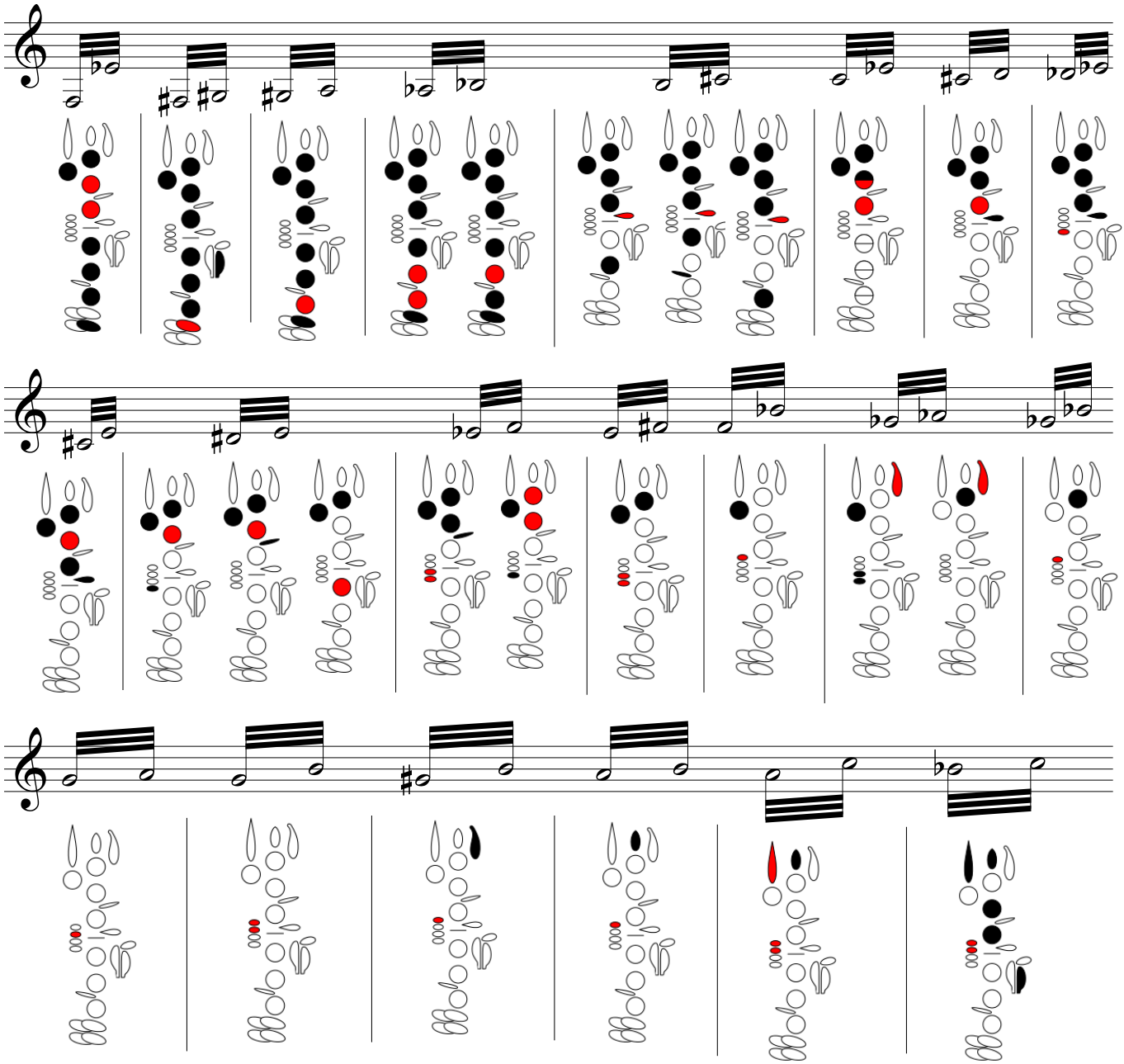
C#4-E4: Good for Poulenc (mvt. 1, end)

D#4-E4 3: Easy to forget about this one – surprisingly useful!

Bb4-C5: Can also do this without the resonance, but will be thinner.







# Fingerings, Part II: Chalumeau
## (or, Shading)

*"Don't tune; play in tune." ~Richard Killmer, Professor of Oboe, ESM*
*"Intonation is like B.O. Everybody's got it; some people take care of it."*
*~Dan Lutz, Director of Bands, UMass Lowell*

## Little Things That Affect Intonation

- **Length:** As we all know, pulling out the barrel will lower the instrument's pitch and pushing in will raise it. Note that this affects notes closer to the barrel (throat tones) more than notes farther from the barrel (e.g., low E). Pulling out between the upper and lower joints will generally affect right-hand notes more, and pulling out the bell will affect the lowest pitches on the clarinet (and B4, C5, etc., of course). If one part of your range is out of tune, try playing around with this and see what happens. (You should never have to pull out far enough to see cork, though!)
- **Temperature:** As most of us have figured out, a cold room/instrument/marching band competition means you'll play flat; a hot room/instrument/auditorium means you'll play sharp.
- **Pressure:** If you bite with your embouchure, you'll tend to play sharper – a too-loose embouchure will tend to go flat. Likewise, if you hold the clarinet too close, you'll tend to play sharper, and too far out will tend flat.
- **Volume:** The louder you play, the flatter you'll go (unless you strengthen the corners of your embouchure!)
- **Reeds:** Different reeds will have slightly different intonation tendencies due to individual quirks. However, a general rule of thumb is: Soft reed = flat, hard reed = sharp. (Since reeds tend to get softer with use, new reeds may tend to be a bit on the sharp side and then "age in" to better intonation.)
- **Mouth Shape:** The shape of your oral cavity and tongue position can have a significant effect on intonation – generally, I have found that a higher tongue position can slightly raise pitch and help project tone. This is more pronounced on smaller clarinets, and I have made particular use of it on Eb.
- **Air Density:** Perhaps the most interesting… You may have noticed that if you're tuning with an electronic tuning expediter (also known as a "tuner" – see below), you tend to start out a bit sharp and then settle into a pitch. This may be partly subconscious adjustment, but why (as a rule of thumb), does the pitch start sharp and then come down? Part of the breath you take in before playing never makes it all the way down into the lungs and therefore the oxygen is never exchanged for carbon dioxide. Since $O_2$ is less dense than $CO_2$, the density of the air at the beginning of the breath is slightly lower, resulting in slightly faster reed vibrations and a slightly higher pitch. I have read (although not personally experienced) that this effect is significantly enhanced with helium – raising the pitch by as much as a major third!

## Intonation in Context

Dan Lutz, the Director of Bands, at UMass Lowell, uses the phrase "tuning expediter" rather than "tuner". Why? Because what the box (or, perhaps more realistically, smartphone) tells you is not really relevant. It'll get you in the ballpark, probably. But intonation is very much a contextual issue. What do I mean?

For one example, imagine that you're playing a field show in 40-degree weather, and you have tuned to the tuning expediter at exactly A=440. That's great, but everyone else (and in particular, the mallet percussion!) will be much flatter than you – and therefore you will be out of tune.

For another example, the way our 12-note system works is not quite perfect. Going up twelve fifths from a note gets you very close to the note you began with (up several octaves, of course) – but not quite. Different people have chosen to deal with this in different ways over the centuries. (For a detailed and lively account, check out Ross Duffin's "How Equal Temperament Ruined Harmony (and Why You Should Care)"!) While keyboard instruments, harps, etc. use equal temperament in modern times, adjustable-intonation instrument ensembles (e.g. orchestra, band, clarinet choir) use "just intonation". Long story short, notes need to be tuned differently depending on the context. For instance, if you're playing a note a major third above the root of a chord, you should adjust your intonation by -14 cents. (If you're playing an A in an F major triad, you should "tune" it 14 cents below what your tuning expediter tells you.)
**Pro tip**: Make sure your tuner shows you cents and not hertz!

| |
|---|
| Minor 2nd: +12 |
| Major 2nd: +4 |
| Minor 3rd: +16 |
| Major 3rd: -16 |
| Perfect 4th: -2 |
| Augmented 4th: +17 |
| Diminished 5th: -17 |
| Perfect 5th: +2 |
| Minor 6th: +14 |
| Major 6th: -16 |
| Minor 7th: +18 |
| Major 7th: -12 |
| Dominant 7th: -31 |

In practical terms, what does this mean? If you're playing a major third, lower the pitch. If you're playing a minor third, raise the pitch. If you're playing a fifth, DO NOT BE FLAT. Those are the big three – the rest are there if you need to really do some detailed work.

It is for all of these reasons – the ease which we can make minor adjustments, the necessity of making these minor adjustments, and the fact that music is a communal art – that Mr. Killmer tells us, "Don't tune; play in tune." Realistically, tuning one pitch at one dynamic level to a tuning expediter tells us very little, and gives us a false sense of being "in tune", when intonation is really a process of constant adjustment. It is more necessary to get "in the ballpark" when playing with fixed-pitch instruments (e.g., piano, harp, mallet percussion, etc.), when playing unfamiliar instruments (e.g. auxiliary clarinets), and in unfamiliar conditions (i.e., a 40-degree field or 90-degree stage). However, in the setting of a normal school band, it doesn't make sense to me to spend time tuning as an ensemble – everyone should know where to set their instruments to be in the ballpark, and then should learn how to make adjustments from there.

## Some Notes on the Fingerings

Attached at the end of this handout is a fairly comprehensive chart of chalumeau fingerings. Specific notes on some of the fingerings follow.

B4: Don't block the bell!
B4 4: Raises pitch and warms tone slightly

C5 3: Strangely enough, lowers pitch slightly

D#5 2: If you're super-fancy and have a left-hand pinky G# key!

E5 2: Slightly flat. Stuffy. Effect fingering.

F#5 3: Slightly sharp. Good for slurs up to backless D6, Eb6

G5 2: Raises pitch slightly. Also try other pinky keys for shading.

G#5 1: Experiment with pinky keys for shading.
G#5 2: "This should be used only in the most dire emergencies, but it is handy in dire emergencies." ~David Pino

A5 2: Adds some darkness and depth to the sound
A5 3: Somewhat stuffier.

Bb5 7: Good for trills from Ab5 1!

B5 2: Can't imagine why you'd use this except in combination with Ab5 1 and Bb5 7.
B5 3: Somewhat flat.

C6 2: My go-to fingering for soft, delicate work! Nicely in-tune and responds easily.
C6 3: Slightly flatter, more stable. Also good for softer passages.
C6 4-5: These should probably be listed under altissimo fingerings, but they look enough like covered clarion fingerings that I put them here…

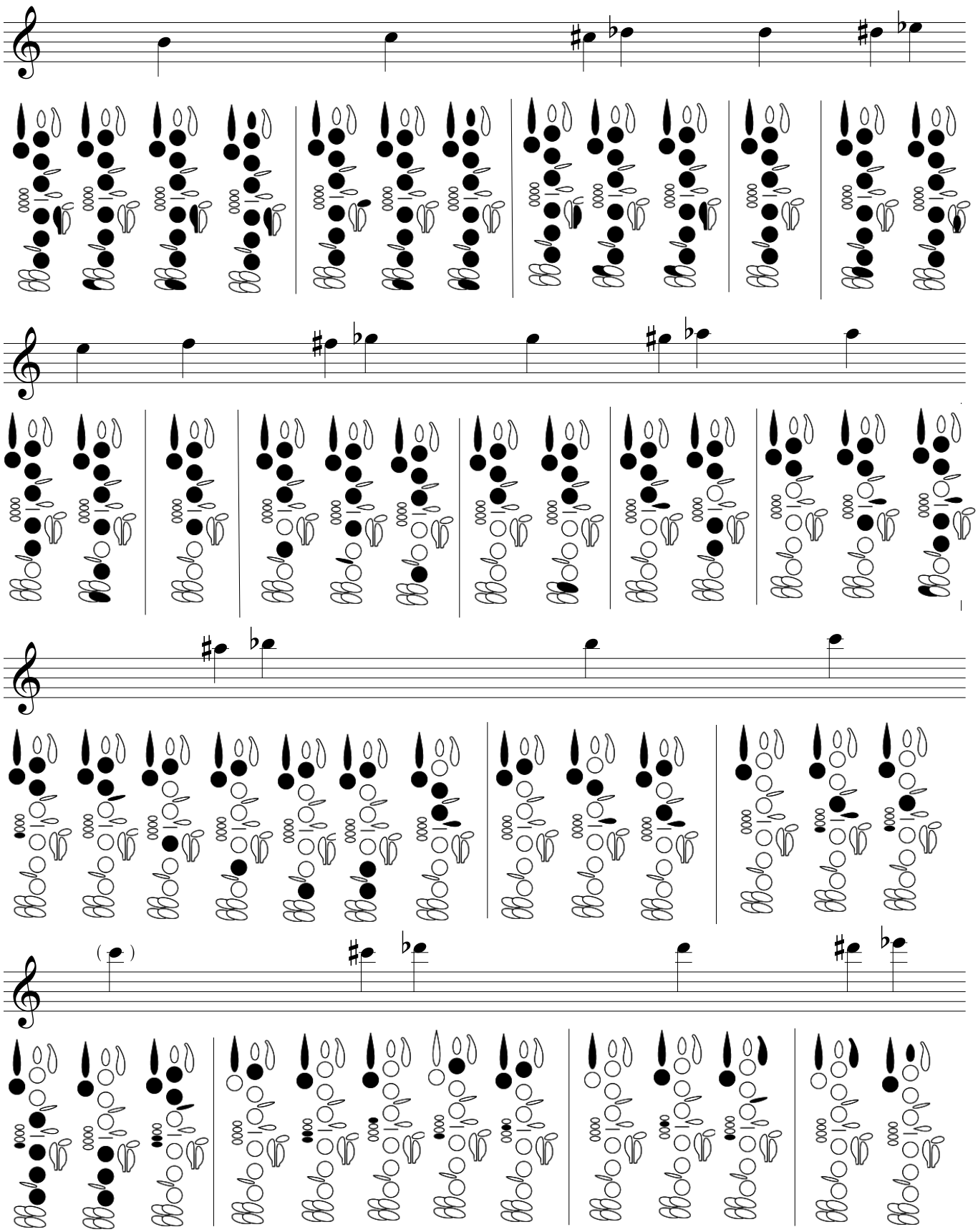
C#6 1: Good for fast passagework – sounds worse when loud and/or sustained
C#6 5: Good for trills from B5

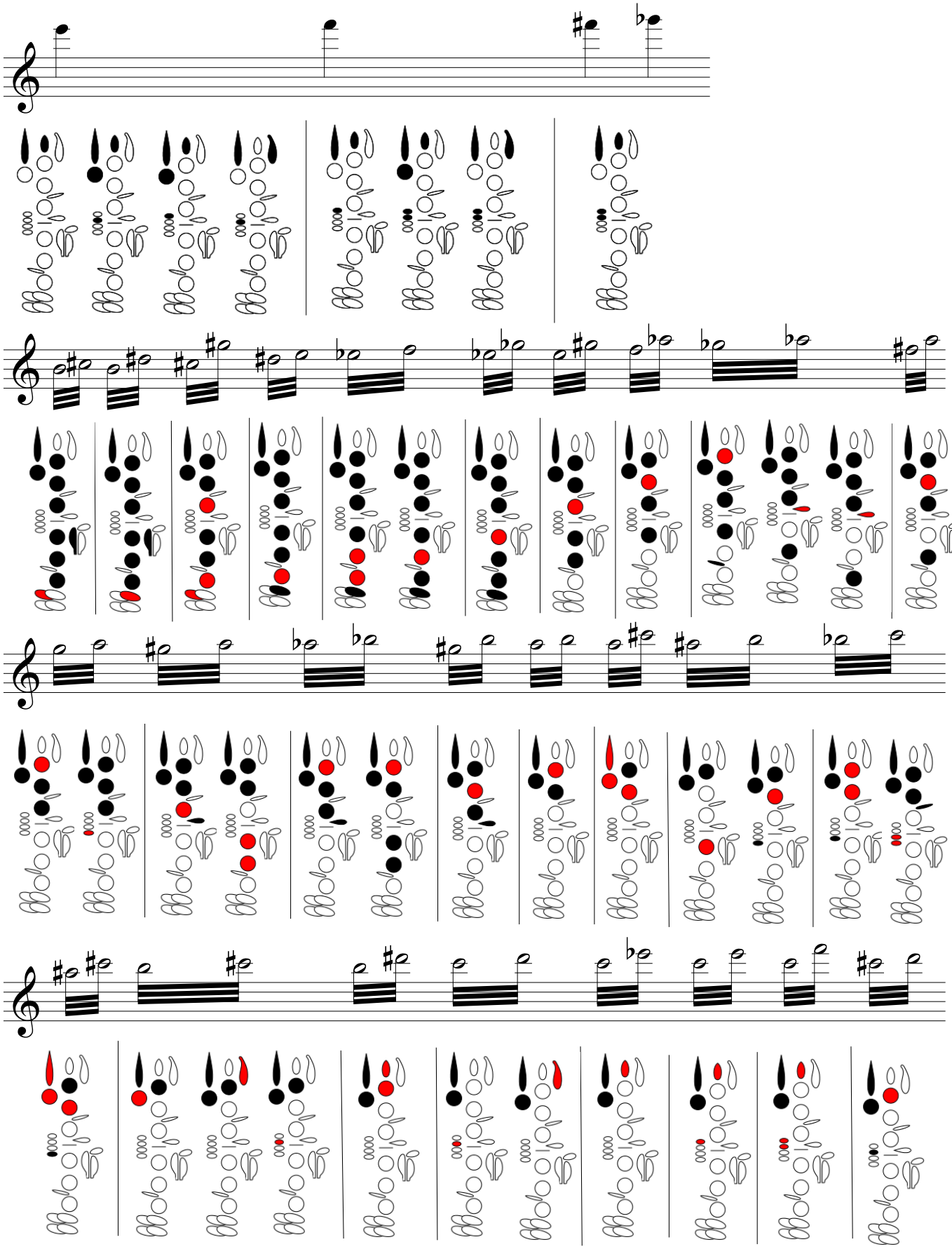
D6 3: Good for very soft dynamics, for instance the slow movement of Rachmaninoff 2.

Eb6 2: Good for tremolo from C or soft breath attack (Strauss, *Death and Transfiguration*)

## Some Notes on the Trill & Tremolo Fingerings

C#5-G#5: Useful in Kodaly's *Dances of Galanta*. The G# is rather weak.
E5-G#5: This one's really nice!
F5-Ab5: So's this one!
Gb5-Ab5 3: Perhaps the best compromise of the three. Not too weak and not too badly out of tune.
G5-A5: For when your ring finger gets tired. I wish I knew about these when I was playing John Barnes Chance's "Variations on a Korean Folk Song"!
G#5-A5: Nice for soft, muted sections
A5-B5 2: Slightly flat, but removes key noise – good for soft, exposed sections.
A5-C#6: Awkward, but probably better than the alternatives.
A#5-B5: Seems obvious, but not. Good for Debussy's *Premiere Rhapsodie*
A#5-C#6: Also good for *Premiere Rhapsodie*, in the runs leading to the final fast section.
B5-D#6: Slide your left index finger from covering the tone hole to pushing the A key, always doing one or the other. Good for Bartók's *Miraculous Mandarin*, second cadenza
C6-D6 1: More in tune and better matched in tone than C6-D6 2.
C6-Eb6: Good for Stravinsky's *L'Histoire du Soldat*
C#6-D6: Not really sure where this would come in handy, but it works. Liable to grunt.



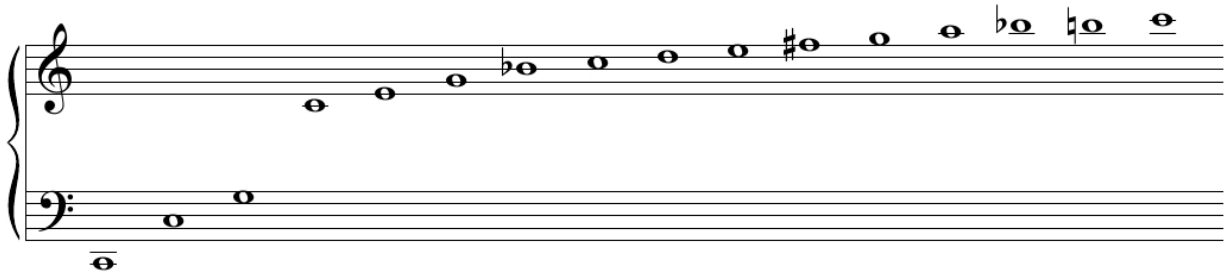


# Fingerings, Part III: Altissimo
## (or, Know Your Partials)

There are tons of altissimo fingerings, but only two important concerts: partials and voicing.

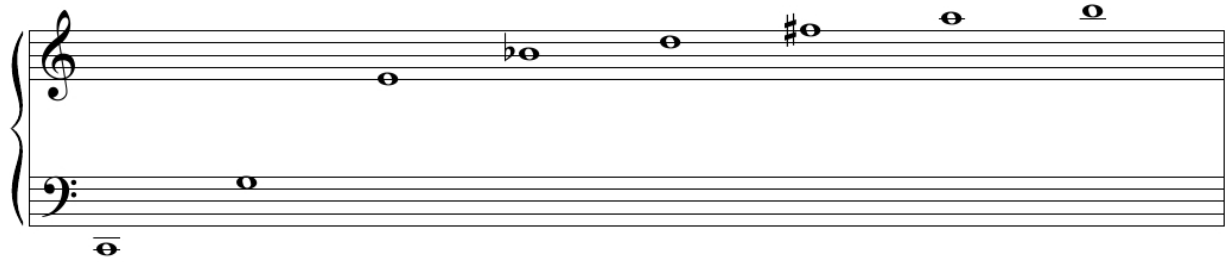
### A Little Bit About Acoustics…

Consider a string vibrating at the pitch C2. A string half the length will vibrate with twice the frequency, resulting in a note an octave higher – C3. A string a third the length will vibrate with thrice the frequency, resulting in a note a twelfth higher – G3. Continue dividing the string, and you get higher and higher harmonics (also: overtones, partials) in a series:

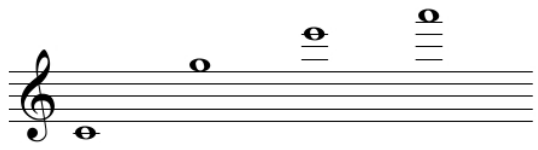


This harmonic series is the basis for playing brass instruments, and is used on string and woodwind instruments as well.

Clarinet acoustics is a complicated sort of thing that is still not totally understood. However, roughly speaking, the clarinet only uses every other overtone since it is a closed (at the reed end) cylinder (the bore is roughly the same diameter through the entire tone hole area):



That's why some notes have very similar fingerings, for instance:



From C4 to G5, add the register key.
From G5 to E6, lift the left index.
From E6 to A6, add the right pinky.

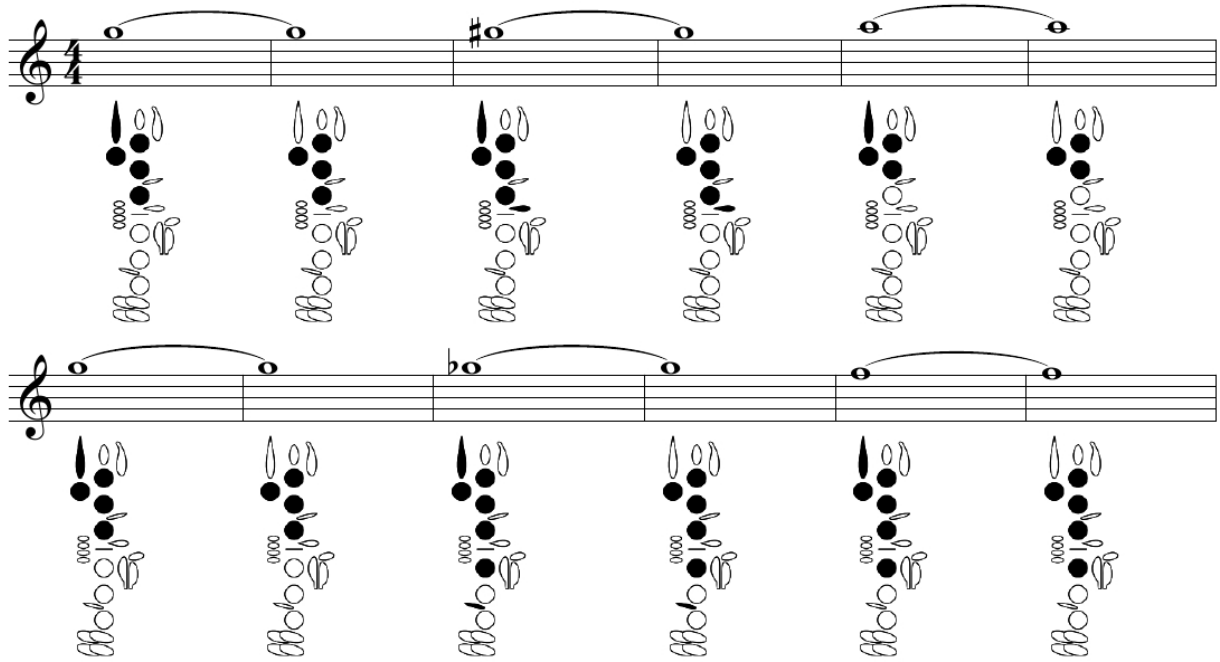
"But wait!" you cry. "Shouldn't that highest note be a Bb, based on the harmonic series?" Well, yes and no. That Bb in the harmonic series is flat to begin with – and clarinet harmonics tend to be less and less in tune the higher you go – sometimes as much as a half-step (or more)! This is somewhat unpredictable, so some modifications may be required if you're experimenting with new fingerings based on the overtone series.

## Voicing: Practice With Partials

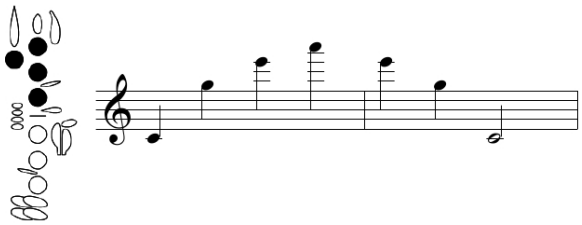
In order to achieve notes high in the altissimo register, one does not simply move one's fingers. Rather, the shape of the oral cavity and throat must change to enable higher partials to come out – this is known as voicing. The best way I know to develop voicing is already familiar to brass players: slurring up and down partials!

**A preliminary exercise:**

Start in the clarion, then remove the register key while remaining on the same pitch. I like to start on G and move up and down (just the first few shown each way so you get the idea):



This is to get you comfortable voicing partials by preventing the notes from going down to their chalumeau counterparts. Then, try for series of four partials up and down on a single fingering:



This is a good one fingering to start with - then move up and down standard chalumeau fingerings. The longer the tube, the more difficult it will likely be. I would start by using an air attack on each note, then move on to slurring/tonguing combinations.

If you master this exercise, voicing altissimo fingerings will give you no problems!

**Pro tip:** You'll get smoother connections between fingerings if they're from the same harmonic in the series. This is why, for instance, D6 1 to G6 11 (both fifth partial) will be smoother than D6 1 to G6 1 (fifth partial to seventh partial). How can you tell? In general, see what chalumeau fingering it most resembles and go up the harmonic series from there: D6 1 looks like Bb3 (whose fifth partial is D6, as expected). G6 11 looks like E4 (note that the fifth partial "should" be G#6, but in this case it's flat by a half-step!), while G6 1 looks like A3 (whose seventh partial "should" in fact be G6!).

## Some Notes on the Fingerings

Attached at the end of this handout is a fairly comprehensive chart of altissimo fingerings. Specific notes on some of the fingerings follow.

G5 1: Voicing is everything!
G5 2: Slightly higher and stuffier

G#5: Lip down a lot!

A5 1: Same as G#5 – rather flat. High tongue to focus and sharpen.
A5 2: Still slightly flat, but closer to in tune! High tongue to focus and sharpen.

A#5 1: Great for tremolo to C#6!

B5 2: Flatter and duller
B5 3: Harsher and sharper

C6 1: Great for very soft dynamics – holds pitch well. Also can add first side key. Good in combination with higher altissimo fingerings
C6 4: Quite low
C6 5: Quite high
C6 7: Technically a clarion fingering, but enjoy it here!

C#6 2: Trills down well to B5 1 (with the side key held down too)
C#6 4: Backless fingering! These four fingerings work well together and tend to match/slur well with the clarion.

D6 1/2: See which is in tune for your instrument!
D6 3: Great response at pp
D6 5: Backless fingering! These four fingerings work well together and tend to match/slur well with the clarion.
D6 6-8: Backless variants
D6 9/10: Technically clarion fingerings, but enjoy them here!

D#6 2: Good in combination with C#6 1
D#6 3: Use with lower clarion notes for smoother connection
D#6 4: "This fingering is not even worthy of consideration under any circumstances; it is miserably flat on all clarinets and any of the [other fingerings] for that tone will serve the purpose far better." ~David Pino
However, Hadcock notes that it's worthwhile to check it out for Eb!
D#6 5: Backless fingering! These four fingerings work well together and tend to match/slur well with the clarion.
D#6 6: Backless variant.

E6 2: Backless fingering! These four fingerings work well together and tend to match/slur well with the clarion.
E6 3: Hadcock's "never miss" E. A little sharp and bright, but secure! Use it if your reed feels funky in Moussorgsky's *Night on Bald Mountain*, i.e.

F6 1: F6 2: Long/covered F. Very stable, but inflexible pitch (slightly sharp). Don't block the bell!
F6 3: Somewhat sharp, but good for trills from E6 1.
F6 6: RH sliver key makes F6 1 brighter and sharper, and also prevents it from jumping up a partial.
F6 7: Variant of never miss E6 3. Hadcock says it's sharp, but plays nicely in tune for me. I use it in Shostakovich 9, Mvt. II with F#6 3.

F#6 1: Make sure the RH rings stay up! In tune, but sometimes hard to find the partial
F#6 2: Not as bright, but much lower in pitch
F#6 3: Long F# - good to pick the note out of nowhere. Difficult to slur to. I use it in Shostakovich 9, Mvt. II with F6 7.
F#6 5: Stuffy and slightly flat
F#6 6: I have no idea when you would ever use this fingering, but it works.
F#6 11: Use between F6 1 and G6 19. Also experiment with just one side key.
F#6 11: "Squeak Bb". Slightly sharp, but good to slur to. Good basic fingering.

G6 1: "Junior high G". Quite sharp. Particularly horrific with F#6 2. I'd avoid it and substitute G6 8 in similar situations.
G6 2: Use in combination with F#6 1.
G6 3: Sharper than G6 6.
G6 6: Quite stable. Good for big leaps.
G6 7: Rather sharp. Don't hit the lower partial (F a step lower).
G6 8: A better default than G6 1 for sure! Good for scale passages.
G6 9: Can be quite sharp, but rather flexible. What people hit when trying for C7 13!
G6 10: Quite a bit sharper and less flexible than G6 9. Not sure why you'd use it.
G6 11: Another good default fingering. Very good for slurs. RH sliver to raise pitch.
G6 19: Use between F#6 11 and G#6 18. Also experiment with just one side key.

G#6 1: Very solid fingering
G#6 5: Very stable. If sharp, add RH middle.
G#6 6: Good between G6 8 and A6 2.
G#6 7: Sometimes good for slurs.
G#6 8: Sharp but useful in some technical passages.
G#6 9: Good in Eb major arpeggio (from Eb6 1)
G#6 14: Sharper than G#6 13.
G#6 16: Use with G6 19. Also experiment with just one side key.

A6 2: Good for slurring from E6 1 without any pinky keys.
A6 5: Only used for quick slurs from E6 to A6 and back.
A6 10: Very awkward and difficult to get the right partial. But it's there.

A#6 1: Miraculously good. Great for slurring up from F6 2, decent at slurring back down. Don't block the bell!
A#6 4: Use in combination with C7 13 (can keep low F key down). Variant of A#6 1 depending on where you're coming from.
A#6 5: "Used by many players—although I don't know why!" ~Peter Hadcock
A#6 6: Use with A6 2.
A#6 8: Good intonation, easy response.

B6 1: Use in combination with C7 2
B6 2: Easy to get a lower partial.
B6 3: Stable, but not really useful in scales.
B6 4: More useful in scales.
B6 5: Good with C7 11.
B6 6: Use between A#6 6 and C7 12.

C7 1: Careful not to hit a partial below (Bb a step lower)
C7 2: Use in combination with B6 1
C7 12: Good for scale passages.
C7 18: Good to raise pitch, if you can get there!

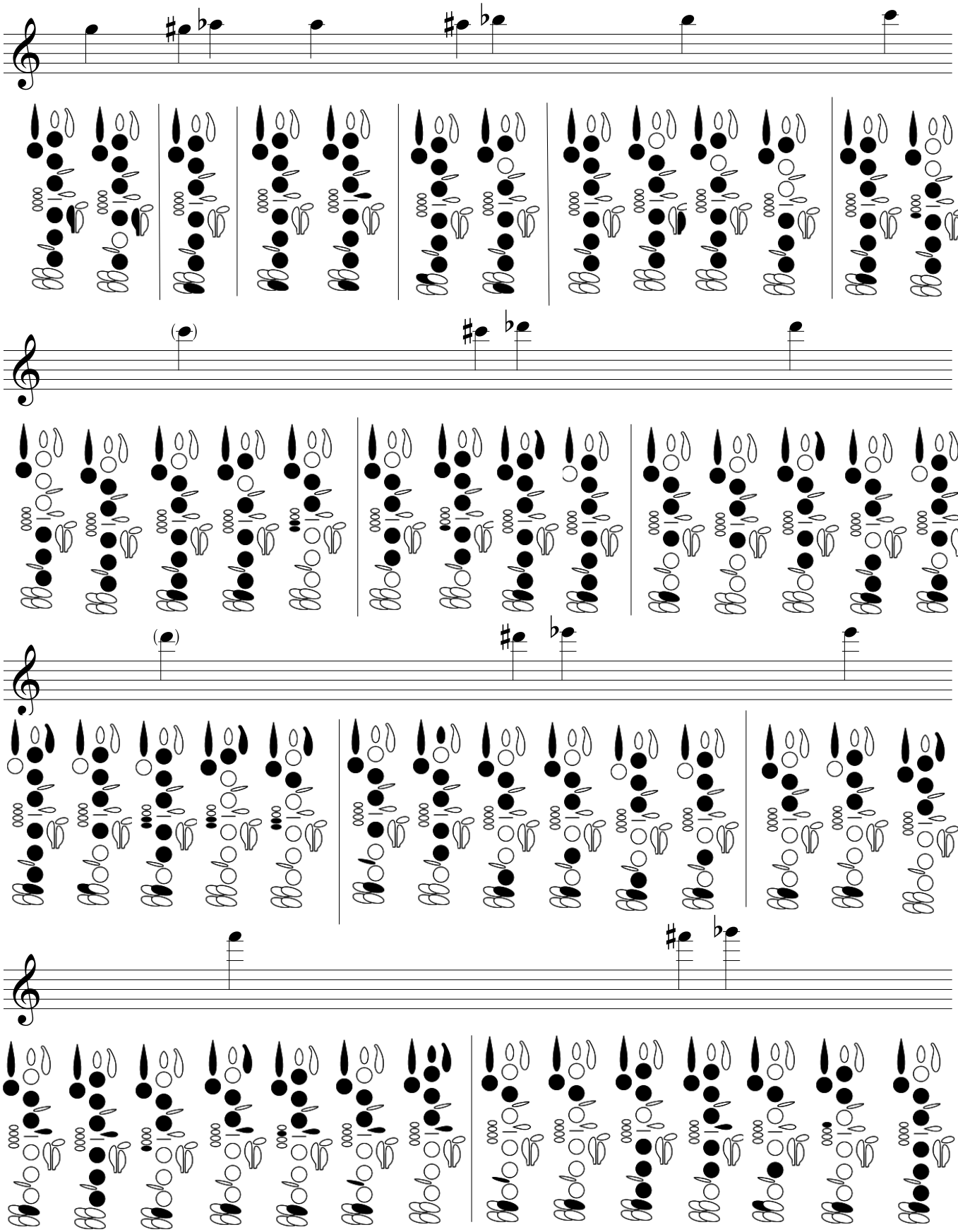
C#7 1: Pops out pretty well with half-hole!
C#7 4: Good for octave skips
C#7 5: Use with B6 6 for scalar passages (ahh!)

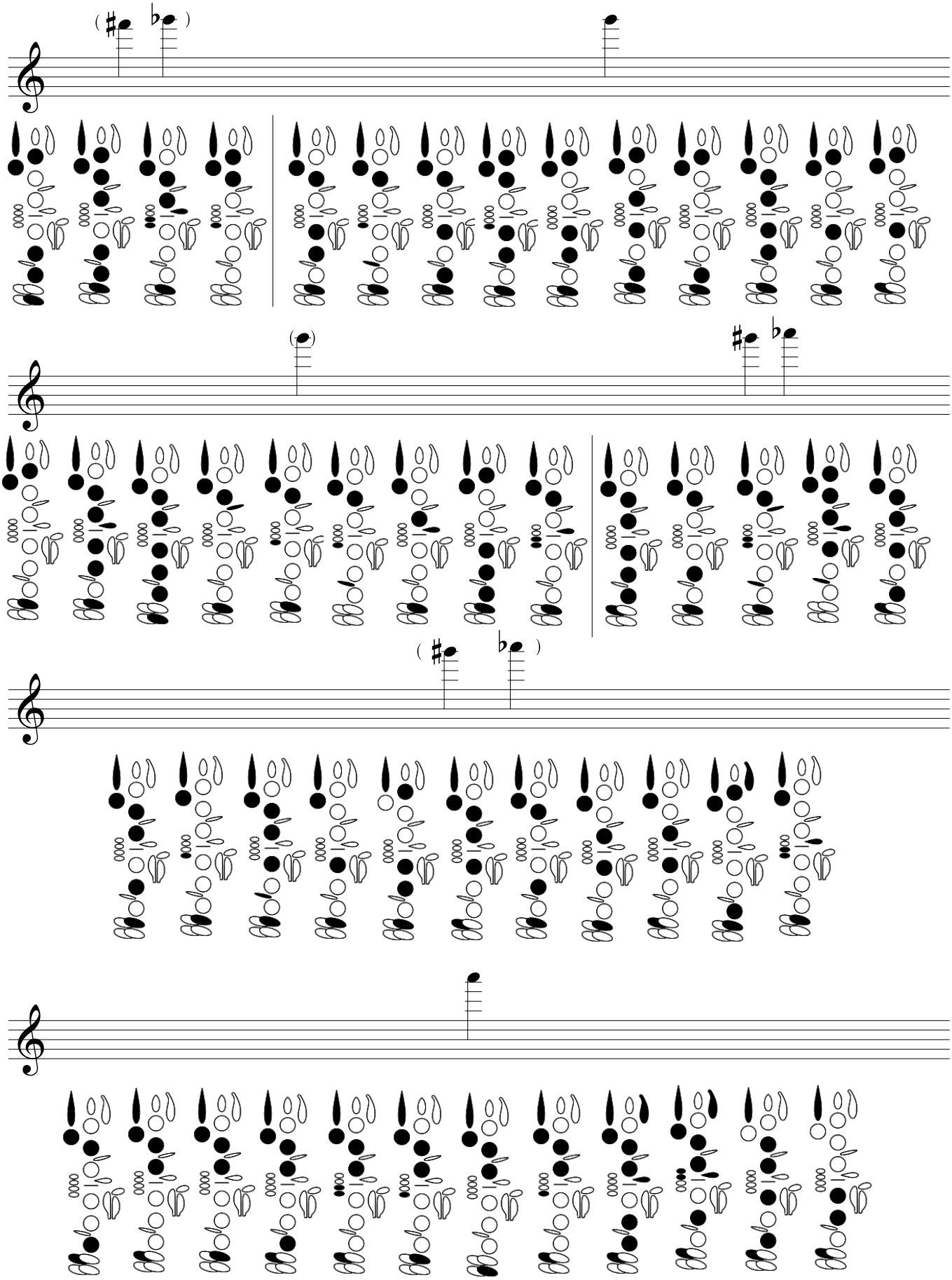
Anything above: I can't really get these notes right now with my set-up and voicing ability. I got them from the internet… Give 'em a try! (Maybe teeth lightly on the reed could help?)

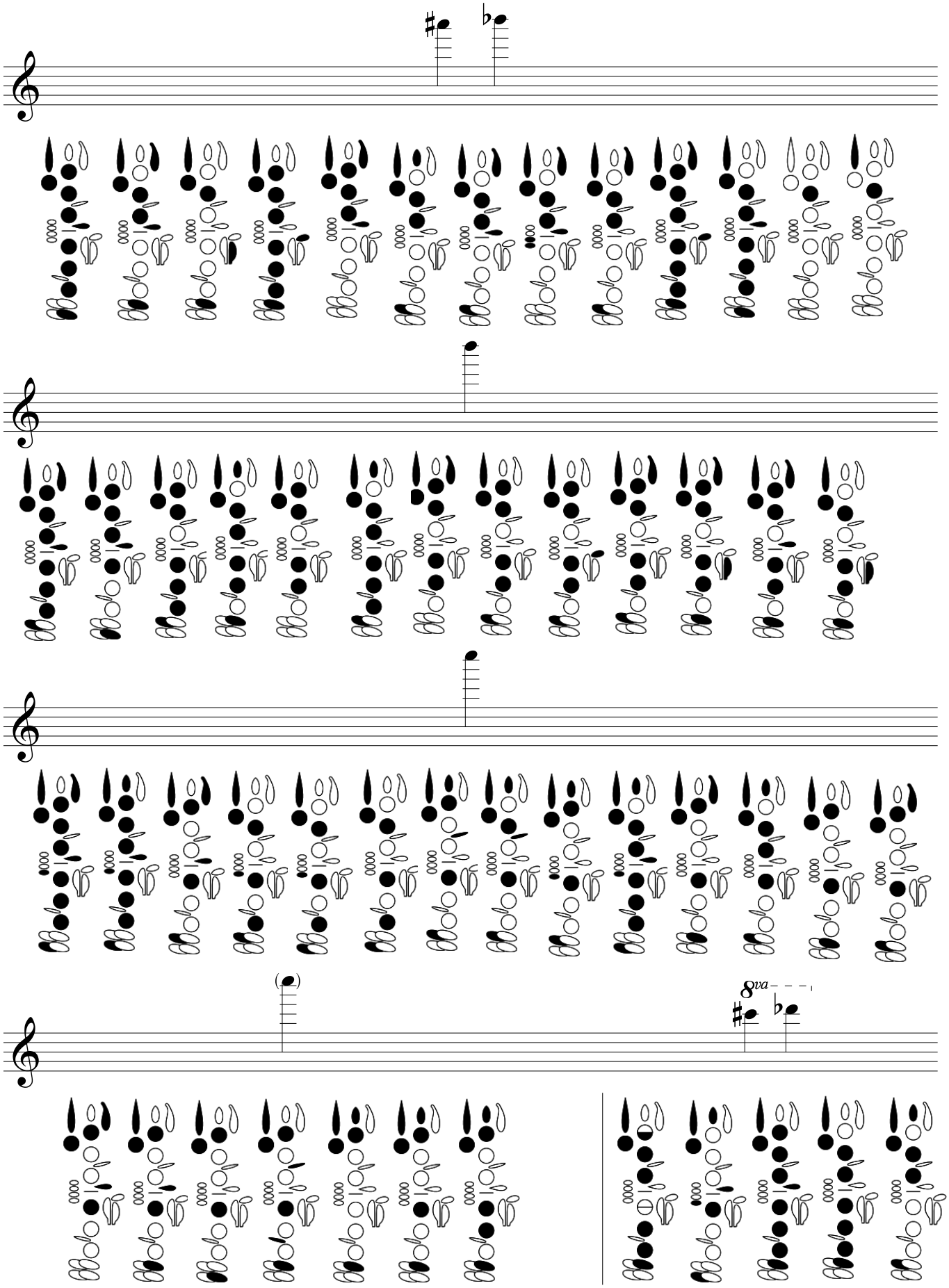
## Some Notes on the Trill & Tremolo Fingerings

Green comes up when red goes down and vice versa.

Bb5-C#6: Good for Klezmer work.
C#6-G6: Good for top of page 2 of Nielsen concerto
D6-G6: Not very good, but all there is.
D#6-E6 2: Quite nice.
D#6-E6 3: Trill RH rings
Eb6-F6 2: Open throat!
E6-G6: Smooth but awkward
E6-G#6: NOT smooth. Voice carefully!
Ab6-Bb6 2, 3: These don't work for me, but they must for someone?
B6-C#7, C7-D7: Questionable reputability. I can't voice them well, but that doesn't necessarily mean they're bad.



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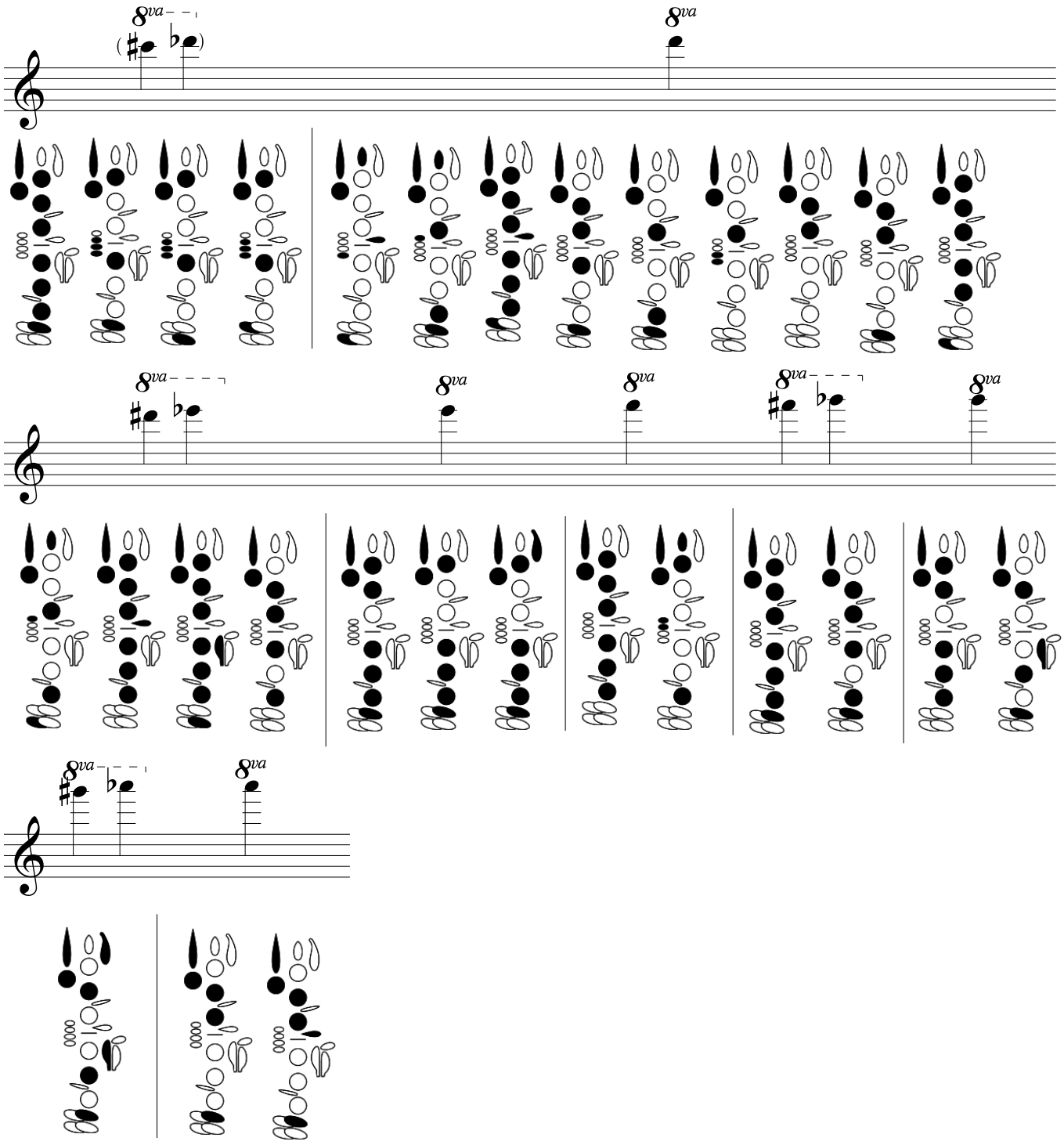
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