

The 9 EQ Pivot Points

Unlock Your Most Powerful Audio Tool

Hey there! If you're serious about creating professional, polished mixes, wielding EQ with confidence and authority is critical to your productions.

Tell me if you've said any of the following to yourself during a service:

- "That vocal sounds **thin** and **tinny**, like she's **stuck in a Folgers can.**"
- "I can't make out the lead electric parts. They feel **distant, muddy**, and **dull.**"
- "The cymbals feel WAY too **bright** and **edgy**. And just plain painful!."

Good Thing - We can easily address these tonal problems with EQ, your most powerful audio tool.

Bad Thing - You won't find an "un-bright" knob on your EQ. Or a "bail me out of a Folgers can" button. Or a "de-mud" parameter.

Which brings us to our problem... Your audio console or software doesn't speak the same "language" as you. Humans *describe* sound using *adjectives*. Equalizers *measure* sound with *math*.

For example, I'd say Shaq is **insanely tall**. A piece of gear would say he's **7'1"**.

So, what's the solution here? **Learn how to translate the adjectives and analogies we experience while recording, mixing, or mastering into actionable data for our equalizers.**

We must learn to do for ourselves what your car stereo already does for you: translate. Your Honda Civic probably has a BASS and TREBLE knob on the stereo. Turn the BASS up to add more thump in the bottom, easy enough. Behind the scenes that knob's controlling an EQ.

You won't find BASS or TREBLE labels on your audio console, though. Just a scientific tool waiting for *us* to tell it how much of a specific frequency range to cut or boost. **What if we could internalize our own set of BASS and TREBLE labels for the whole frequency spectrum?**

That's the 9 EQ Pivot Points!

This framework gives you **9 key frequencies** (pivot points) + **two adjectives assigned to each** that convey their qualities in a memorable way. Here's it in action:

1. Listen and isolate a specific tonal problem (muddy vocals, harsh cymbals)
2. Describe the issue using one of the adjectives in the framework
3. Cut or Boost the associated frequency (pivot point)

This is WAY more powerful than memorizing a few EQ curves or relying on a library of presets (which is really a giant crutch). I'm teaching you to fish, not just giving you a bucket of chum.

So, what does putting this system into place do for your audio life?

- **You will finally kick your preset addiction and start making smart decisions with EQ for yourself** (because betting on happy accidents isn't a good way to grow a career).
- **You will take your productions from amateur to amazing, without spending a penny** (upgrading your ears is the best investment you can make).
- **You will reap the simple satisfaction of *knowing that you know what you're doing with EQ*** (because it simply feels good to know what you're doing, right?)

Here's the best part: you only have to remember three numbers, 5, 1, and 2. Those give you the starting digit for each frequency. Then you simply add the appropriate zeros to fill out the rest. Here's the 9 EQ Pivot Points:

50 - 100 - 200 || 500 - 1,000 - 2,000 || 5,000 - 10,000 - 20,000

What you can expect from the rest of the guide:

- Specific use cases to cut or boost each pivot point
- At least one reference track per frequency that illustrates each pivot point
- A [one pager at the end](#) listing all 9 EQ Pivot Points for you to print out (it works best if you share it with your tech director and worship pastor)

After you put this to work, shoot me an email at michael@producedbymkc.com. I'd love to hear how this framework takes you to the next level. Now hop to it!

Pivot Point #1 - 50Hz

- Depth & Weight

Up first, 50Hz, our subby friend all bass heads love. This is waaay down in the basement, the foundation of our mix. It's what rattles my brother's pickup truck and gives Kanye a career.

Single out 50Hz and you're quite close to the fundamental of a low G on a bass guitar. You'll find the core and body of a kick drum down there as well.

[Midnight](#) by Coldplay, about halfway through, has some great sub bass work that fills up the 50Hz range. And it's impossible to forget Anomalie's [Hang Glide](#), one of my all-time favorite sub reference tracks.

Use Cases - 50Hz:

- Boost to...
 - **make your kick drum hit you in the chest harder.** Because everyone loves that oh-so-powerful feeling.
 - **add some depth to bass guitar** (Use a low shelf. Boosting with a narrow Q on parametric will make just that one note (G) stick out too much).
- Cut to...
 - **make room for your bass guitar to sit "under" your kick.** Two instruments competing for the same parking space can get dicey, so cut 50Hz on your kick to make a nice deep pocket for your bass guitar to live.
 - **prevent low frequencies from drowning out higher frequencies.** Low end's hard to control since it usually takes longer to decay (go away) than high frequencies. Tightening things up here gives your mix more focus.

Pivot Point #2 - 100Hz

- Warmth & Punch

Next is 100Hz, that friend who wants to give you a bear hug every time you see him. He's a bit two faced, though. Warm and cuddly most times, but will turn around and punch you if you make him mad (Dad joke alert. Sorry, not sorry.)

I like to think about 50Hz vs 100Hz this way - 50Hz slugs you in the chest, 100Hz **punches** you in the throat.

We can learn from live sound here. Many subwoofers start to hand off custody to the main PA around 100Hz (depending on where your frequency divider is). So, if you feel like the low end overall gets out of hand, I'd check your subwoofer balance to make sure it's playing nice with your mains. In the same way, we can treat our 100Hz and below range like our subwoofer balance (you might even have a sub in your studio).

The 808 on [Palm Trees](#) by Judson Wright hits with some Mayweather **punch** to it. In a more sustained sense, the bass guitar on [Video Sunshine](#) by Knox Hamilton sits **warm** and **fat**.

Use Cases - 100Hz

- Boost to...
 - **bring PHATNESS to your snare.** Bethel's [You Make Me Brave record](#) has a fantastically PHAT drum kit accompanied by a wonderfully warm bass guitar.
 - **give keys a stronger foundation when in a sparser band context.** Many acoustic sets lack bass instruments, so championing a rhodes or synth carrying the bottom makes all the difference.
- Cut to...
 - **remove "throatiness"** in a vocal or rack tom. Buildups in the 100-150Hz range often sounds "hoot-ey" as well (Blowfish not included).
 - **stop your bass guitar from stepping on the kick drum.** The 50Hz region of a bass still provides the foundation, but a hole at 100Hz will make room for the kick to **punch** through.

Pivot Point #3 - 200Hz

- Thickness & Mud

Ah, beloved 200Hz. Can't live with it, can't live without it. **Here's exactly why most folks struggle with 200Hz - every instrument in your mix overlaps here.** Drums, guitars, keys, vocals, shakers, didgeridoos, EVERYTHING.

A *lack* of 200Hz makes a mix feel hollow and weak, but too much leaves you more bloated than Ron Swanson post-breakfast. I'm very selective with what instruments heavily occupy real estate in this range, especially if it's a vocal-heavy mix.

Joey Landreth's acoustic and vocal hangs out around 200Hz a ton on [Remember](#). The synth bass on The Japanese House's [Maybe You're The Reason](#) leans on 200Hz quite a bit as well.

Use Cases - 200Hz

- Boost to...
 - **add authority and meat to a vocal.** Useful if they tracked far away from the mic (the proximity effect in action).
 - **give body to a solo acoustic piano.** It helps if said piano is especially "ping-ey" and bright.
- Cut to...
 - **clear out gunk in acoustic guitars and droney pads.** As sure as the morning sun, there's a buildup here in these instruments. Often rhythm electrics, too.
 - **create separation between sub and mid instruments.** Try it across your stereo mix and see if it helps bring some definition.

Pivot Point #4 - 500Hz

- **Boxy & Gargle**

Ok, I know I'm reaching pretty far to come up with words like **boxy** and **gargle**...but stick with me. 500Hz *sounds* like cardboard *feels*. And as for **gargle**, you know when you go to the dentist and they use a funny little tube to suck your face off after squirting a ton of ice cold water all over your teeth? THAT'S 500Hz.

Back to our regularly scheduled programming...

500Hz functions like a bassist. Too busy? Super annoying. Not enough? Mix lacks energy. Just right? Now we're cookin' with Cold War peanut oil. It's the **life** and **center** of your mix.

Just like 200Hz, most instruments possess a good bit of energy at 500Hz as well, so ration accordingly. Phil's vocal on [Great Things](#) exemplifies 500Hz like a champ. So does Darth Vader's [breathing](#).

Use Cases - 500Hz

- **Boost to...**
 - **bring out the “[bottle pop](#)” in your snare.** The 1975 has that sound on lock.
 - **add density to a droney pad or synth.** This quickly gets out of hand, but a mix feels bigger with a stronger supporting cast.
- **Cut to...**
 - **clear out the “cheap” sound in a budget guitar amp.** 500Hz commonly builds up in electric guitars, even if you've got a Dumble.
 - **stop the sneaky acoustic guitar from taking over your mix.** Even though small in size, acoustics take up a GIANT amount of sonic real estate. Hack away if it interferes with some rich electric lines or steady keys.

Pivot Point #5 - 1kHz

- Nasal & Knock

Moving on up to 1kHz (1,000Hz). We're now sitting smack dab in the middle of our human hearing range. I want you to pinch your nose and say the words, "Hi, my name is Squidward Q. Tentacles."

1. I just got you to talk about Spongbob's [second best friend](#).
2. Squidward embodies exactly what 1kHz sounds like, **nasally**.
3. 1kHz also reminds me of talking on a rotary telephone. It's intelligible, but unnatural.

Second exercise: Can you click your tongue against the roof of your mouth? If not, at least **knock** on a wooden door? 1kHz again.

Use Cases - 1kHz

- Boost to...
 - **make vocals more "in your face" without making them brighter.** Joan's [love somebody like you](#) does a beautiful job with this.
 - **give more "knuckles" and aggression to rhythm electrics.** A little goes a long way here.
- Cut to...
 - **tame a nasally sounding vocal.** The beginnings of consonants often stick out here. Try a dynamic EQ if you want to get fancy (I like [Tokyo Dawn's Nova](#)).
 - **simmer down an overly "thwacky" tom.** - the drum, not your best friend from high school.

Pivot Point #6 - 2kHz

- Edge & Clarity

We've officially arrived in the top end at 2kHz. Folks usually hear problems in this frequency range first (which makes sense, since the most sensitive part of the human ear is 2-5kHz).

A lift at 2kHz can rescue what was once muffled and bring intelligibility. Too much, though, and things get pinched and brittle. I can always tell if I'm bringing in excess 2kHz if I start squinting like Clint Eastwood. The vocal on [Caught Air](#) has plenty of 2kHz.

2kHz feels geometric. It's got a hard **edge** to it. It's the "click-y" attack on a kick drum. The grit and buzz on a distorted electric. The dictation and consonance in a vocal. The cayenne pepper in your secret chili recipe (I guess it's not a secret anymore).

Use Cases - 2kHz

- Boost to...
 - **add energy to lackluster percussion.** Shakers and tambourines = mix makers. Definitely don't underestimate them.
 - **bring a vocal forward in a mix.** Sometimes that's all it needs to push it over the top and sit just above the band with **clarity**.
- Cut to...
 - **relax a vocalist who's singing a bit too high for their range.** Vocal chords tend to strain and add some unpleasant artifacts in the top end when pushed hard.
 - **tame an overly bright lead electric guitar.** Some overdrive/dirt pedals add a bit too much here, especially on hard-picked transients.

Pivot Point #7 - 5kHz

- Presence & Bite

5kHz. We've now safely left the world of fundamentals and are 98% harmonics. This range sounds more like noise than it does music. **Presence** makes sense to me here since 5kHz *demand*s your acknowledgement. Your ears can't help but pay attention. Like it's edgy neighbor (2kHz), too much 5kHz brings ear fatigue, fast.

Ever had a cat angrily hiss at you? That's what 5kHz sounds like. (I honestly encourage you to recreate these sounds with your mouth and internalize them. They'll stick more, promise.)

The "ch" consonant (as in *churro*) in human speech hangs here, too. It's not technically an "s" sound, but a de-esser can help smooth out this area if needed. Toto's [I Will Remember](#) has some wonderful 5kHz representation on the snare and lead vocal.

Use Cases - 5kHz

- Boost to...
 - **get some CRACK on your snare drum.** A snare with both PHATNESS and CRACK is my cup of tea.
 - **make your acoustic guitar function like a shaker in a percussion-less mix.** If there's plenty of other tonal instruments in the mix, you can shift your acoustic guitar over to this more rhythmic role.
- Cut to...
 - **soften harsh cymbals.** Or just throw your B8's in the trash and buy some awesome dark, washy [Istanbul](#) cymbals.
 - **create separation between your background and lead vocals.** Leave the 5kHz on the lead so they've got some **bite** to stand out with.

Pivot Point #8 - 10kHz

- Sizzle & Snap

Up, up, and away to 10kHz. It's how all good fried chicken should be - crispy. Say "**sizzle**" out loud and take a listen. Chances are, both of the "s" sounds you just said contained quite a bit of 10kHz.

Note here the snappy attack of your drums (think bottom snare), the splash on your cymbals, **sizzly** synth leads, the tippy top of your vocals, and the metallic quality in tambourines.

An excess of 10kHz doesn't "hurt" your ears like 2-5kHz would, but the mix starts to feel strident and just plain annoying. On the flip side, not enough 10kHz representation and things get dull, lifeless, and boring.

Daft Punk's [Get Lucky](#) has their hi hats cooked to golden brown perfection.

Use Cases - 10kHz

- Boost to...
 - **add "snap" to your snare.** Ok, I promise this guide isn't sponsored by Rice Krispies. BUT, 10kHz gives you **snap**, 5kHz gives you crackle, 500Hz gives you pop.
 - **give your vocals that elusive "expensive sound".** Many sought after vintage microphones have a lift in this area. Try a high shelf and see what magic happens.
- Cut to...
 - **make a rhythmic element in a mix less prominent and driving.** I do this often on trashy shakers.
 - **reduce sibilance in a pinch.** A de-esser's the best tool for the job, but you may not have one in a live situation. Cut too much, though, and they sound like they're singing behind a snuggie.

Pivot Point #9 - 20kHz

- Air & Plastic

We've made it to the penthouse suite, 20kHz. As many of you know, most humans can't physiologically hear 20kHz. It's simply too high. However, we hear frequencies *near* that range (15-18kHz).

Air hits the nail on the head connotatively. It's the breathy top end of a female vocal. The zing in a flying mosquito. I'm often tempted to add some extra pizzazz up here, but too much energy up there brings an artificial and **plastic** quality to the mix.

[Saw You In A Dream](#) pushes the 20kHz boundary on the vocal, for sure. John Marc's [Give & Take](#) has a beautiful 20kHz sheen & gloss across the whole mix.

Use Cases - 20kHz

- Boost to...
 - **add polish and shine to your vocal group.** Start with a high shelf at 10kHz and listen for what it does to 20kHz as well.
 - **bring some life to distant ambient/room mics.** Carefully listen to your noise floor, though.
- Cut to...
 - **tame an overly choppy acoustic.** Like I said earlier, acoustic guitars take up a ton of sonic real estate. The low E starts at 81Hz and the string noise zips all the way up to 20kHz!
 - **soften sharp tambourine hits.** Compression (or limiting) can help in this situation, too. Just make sure and have an ultra fast attack time (<1ms).

The 9 EQ Pivot Points

50Hz - Depth & Weight

100Hz - Warmth & Sub

200Hz - Thickness & Mud

500Hz - Boxy & Gargle

1kHz - Nasal & Knock

2kHz - Edge & Clarity

5kHz - Presence & Bite

10kHz - Sizzle & Snap

20kHz - Air & Plastic
