

Worship Sound Guy Presents:

Ultimate EQ Cheat Sheet

EQ Starting Points For Live Sound

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EQ CHEAT SHEET

Part 1: Drums

Part 2: Bass

Part 3: Guitars

Part 4: Piano & Synths

Part 5: Vocals

Let's Learn Some EQ Tricks!

Equalization is probably **THE** most important tool that we have as audio engineers, and knowing how to use it properly isn't easy. That's why we put together this guide on some great starting points for EQ'ing various instruments. Keep in mind, these are guidelines, not rules, so use your ears and listen for the sounds we're describing. When you begin to recognize different tones and frequency ranges, and know how to describe them, you'll find it'll be easier than ever to use EQ to get the tones you're looking for.

Let's get started!

-Worship Sound Guy

Worship Sound Guy's EQ Cheat Sheet

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Kick

40 to 60 Hz - Bottom: The tone of the reverberation in the shell, sometimes too rumbly, can be undefined/indeterminate depending on the mic'ing/speakers.

60 to 100 Hz - Thump: The "punch you in the chest" range of the kick

100 to 200 Hz - Body: This is the "tone" of the kick sound.

200 to 2,000 Hz - Ring/Hollowness: This large band is where you can often find issues with ringing and muddy kick sounds.

2,000 to 4,000 Hz - Beater Attack: This is the range to look for the "click" sound of the beater, critical for getting that "basketball bouncing" kick sound.

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Snare

200 to 400 Hz - Body/Bottom: The central fundamental of most snares tends to live somewhere in this range. I usually boost around 200hz for some extra punch.

400 to 800 Hz - Ring: This is the range that tends to give that hollow "ring" to a snare tone that's often undesirable. Crush this range too much, though, and your snare will start to lose some life and sound two-dimensional in the mix.

2,000 to 4,000 Hz - Attack: The stick on the head "crack" is often found here. Even up as high as around 8,000 Hz you'll find the sizzle and snap. The overtone sound of the snares themselves can either be accented or dampened somewhere around this point



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Toms

100 to 300 Hz - Body: Depends on tuning, but a good place to look for the "boom" of a tom sound. Too much and things will sound, well, "boomy." Remove too much, and your toms will sound thin.

500-900 Hz - Honk/Boxiness: This is an important area to listen to in the toms, there can be a distinct buildup of un-musical tones here that can be described as sounding "boxy" or "honky". Try boosting around 700 Hz and you'll hear exactly what this sounds like!

3,000 to 4,000 Hz - Attack: Just as it sounds, this is the the attack of the drum itself from a stick hitting its head.

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Cymbals

200 to 300 Hz - Clank: Here's where, especially on your hi-hats, the "chink" sound of the cymbal lives. As always, season to taste.

6,000 Hz and up - Sizzle: This range is where the "tssssssss" part of the cymbals can be brightened up to add some more life and "air" to a cymbal wash, or you can spontaneously start bleeding from the ears if used without prejudice.



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Bass

40 to 80 Hz - Bottom: Especially with five-string variations, this is where the bottom resonances of most bass guitars live.

80 to 200 Hz - Fundamentals: The primary fundamental of the bass. Right around 180 to 200 Hz is where you can try to cut on a bass that is too "boomy" to clean it up while still preserving it's fundamentals.

200 to 600 Hz - Overtones: These are the upper harmonics of most bass tones, depending on the sound you're interested in. If you're having trouble getting a bass to cut through in a mix, especially a low-end heavy one or one that's getting played back on smaller speakers, this can be where to look.

300 to 500 Hz - Wood: Especially in upright basses, it's that distinctive, woody bark.

800 to 1,600k Hz - Bite: The growl and attack of most basses can be either emphasized or toned down around here.

2,000 to 5,000 Hz - String noise: All the slide noises and slap sounds.



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Acoustic Guitar

120 to 200 Hz - Boom/Body: This is where you'll find most of the explosive low end on a mic'd acoustic that tends to feedback in the live world. A little bit here adds warmth and fullness on a solo performance, but in a dense band mix, it's probably best to just get it out of the way.

200 to 400 Hz - Thickness/Wood: This is the main "body" of most acoustic tones. Too many cuts here, and you're going to somewhat lose the life of the guitar.

2,000 Hz - Definition/Harshness: This double-edged sword of frequency bands will give the definition to the acoustic tone to hear the intricacies in chords and picking, but too much will make it harsh and aggressive.

7,000 Hz - Air/Sparkle: A touch, and I mean a touch, of a shelf boost here can help open up an acoustic sound.



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Electric Guitar

80 to 90 Hz and below - Mud: Lose it, crush it with your HP filter. There's pretty much nothing useful down here, and it will almost always just equate to flabbiness and noise in your tone.

150 to 200 Hz - Thickness: This is where the "guts" of a guitar normally come from, but again, it can quickly cloud a mix on you. Use sparingly, perhaps automate to add sweetness to a solo section or an exposed part, and then tuck it away when things thicken up again.

300 to 1,000 Hz - Life: I call this the "life" of the electric. Many of the things that make an electric sound like an electric live in this range. So attenuating needs to be taken into careful consideration. Too much though, and you start fighting with your snare and things like that, so take note.



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Electric Guitar (Continued)

1,000 to 2,000 Hz - Honk: This is where honky and harsh characteristics can usually be smoothed out with a wide cut centered somewhere in this range.

3,000 to 8,000 Hz - Brilliance and Presence: This is the range that can add shimmer or allow a guitar to cut through a mix when boosted. It can also be where you make cuts to keep a guitar from conflicting with a vocal. If making boosts in this range, keep an eye (ear?) out for noise, as any noise present from distortion/effects pedals will very quickly be accentuated as well.



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Piano

100 to 200 Hz - Boom: This can be a great place to add a little warmth to a solo piano in a more acoustic environment, but more often than not, this will be the first place to cut some of the girth in a piano in a mix or to help reduce feedback potential in a live situation.

3,000 Hz and Above - Presence: Adding a little "air" here can be great to brighten up a dark piano tone, depending on mic placement. Be careful not to bring out the noise of dampers on strings (particularly in the 3,000 to 5,000 Hz range), as this can quickly become distracting and quite jarring.

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Electric Piano (Rhodes, Wurlitzer)

100 to 200 Hz - Boom: As with its acoustic counterpart, the low end can go from lush to overgrown jurassic underbrush really quickly. Particularly with the rich, dense harmonics of something like a Rhodes, cutting "mud" is usually your first order of business

800 to 1,000 Hz - Bark: Managing the "bark" and damper noise can sometimes be an issue, but if things are cutting through too much, odds are it's somewhere in this range.



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Synths

400 to 600 Hz - Thickness: Many synth sounds can get kind of muddy in this range and mess with the clarity of the sound itself, especially when you start layering multiple synths. Searching somewhere in this range is a good place to start.

1,000 to 2,000 Hz - Cut/Bite: This is where you can usually find the attributes of a synth patch that are going to help it poke through the mix. Or you can cut here to help tuck it back in the mix and get it out of the way of things like guitars and vocals.

3,000 to 4,000 Hz - Presence/Clarity: Also like voice and guitar, this range helps add excitement to a sound. And also like just about everything else mentioned here, too much of a good thing can be painful.



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Vocals

100 Hz and below - Rumble: For most vocals, all you'll find down here is mic-handling noise, stage/floor vibrations, air conditioners, etc. Get rid of it. High pass filter.

200 Hz - Boom: This frequency is usually where you'll find the "head cold" sound. The female voice may run a little higher, but this is the ballpark. Anyone with allergies or sinus issues knows exactly what I'm talking about.

800 to 1,000 Hz - Word Clarity/Nasality: Not enough of this range and the intelligibility of some lyrics may struggle to be heard, too much and you get the teacher from Peanuts!



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Vocals (Continued)

3,000 Hz- Presence/Excitement: This is right around the point that tends to add some energy, or some "buzz" to a vocal. Not enough, and the vocal may sound deflated, flat, and dull. Too much, and your listener will feel like he or she is getting poked in the ear canal with a chopstick every time the vocalist opens his or her mouth.

4,000 to 8,000 Hz - Sizzle/Sibilants: Typically this is the range a de-esser is handling. If your vocalist sounds like meat hitting a hot pan at the end of any word ending in "s" or a similar sound, this is where to hunt.

10,000 Hz and up - Air: Want to "open up" your vocal a little? Apply a light shelf boost around here and that should do it. This is not always necessary, though, and simply adding "air" for the sake of it can make things harsh, brittle, and introduce unwanted noise to the sound.