

# **THE EQ AND COMPRESSION FORMULA**

# Table of Contents

INTRODUCTION .....	3
BEGINNING WITH THE END IN MIND .....	4
Part I: Equalization .....	6
THE FRONT AND BACK MIXING PARADIGM .....	6
WHAT IS EQ .....	8
4-ZONE MIX THEORY .....	9
BROAD STROKES FIRST .....	10
THE RULE OF 300 .....	11
EQ CONTROLS EXPLAINED .....	12
EQ IN ACTION .....	13
SLINGSHOTTING .....	14
THE REAL SECRET TO .....	15
MIXING NOBODY TOLD YOU .....	15
FREQUENCY SWEEPING .....	16
Part II: Compression .....	17
THE 4 TRUTHS ABOUT COMPRESSION .....	17
COMPRESSION CONTROLS EXPLAINED .....	18
THE BEST WAY TO LEARN YOUR COMPRESSOR .....	22
COMPRESSION USES .....	24
USING EQ AND COMPRESSION TOGETHER .....	26
SOME FINAL THOUGHTS .....	27
THE NEXT LEVEL .....	29

# **INTRODUCTION**

This book is designed to remove any confusion you might have surrounding EQ and Compression.

It's helpful to use this book as a reference guide, and frequently come back to it whenever you need guidance with EQ and Compression.

EQ and Compression can be a bit of a dry topic to learn and I believe that's part of the reason people have difficulty learning them. At the end of the day we're all artists and we just want to make good music, so it's important to master these tools as quickly as possible.

My goal with this book is to give you some simple paradigms and strategies that you can use to achieve a clear and well-defined mix.

## **BEGINNING WITH THE END IN MIND**

It's important to begin with the end in mind when mixing. Without a definite destination we are prone to wander aimlessly.

The purpose of a definite and clear goal is **NOT ALWAYS** to achieve it 100% exactly as you've set it. The point of a definite goal is that it gives you access to a powerful layer of subconscious resources and decision making which most of the time you're not aware of consciously.

It's like when you're at the cupboard and something begins to tip and fall over and your hand with the surprising reflexes of a ninja automatically reaches out and catches it.

We know that we wanted to save ourselves the mess; the effort of cleaning it all up.

So when we know what we want clearly enough, then reaching our goals becomes more of a reflex. It becomes a reflex because that's our unconscious taking control and making us do the things that would make it happen anyway.

So now that you're beginning to understand a little more about the benefit of clearer goals, let's talk about why you're reading this book.

The fact that you're reading this means you probably want a well-defined mix or at the very least want to improve your mixing.

In order to achieve this, we need to know what a well-defined mix means to us.

The first thing to realize is great mixes are subjective. This means that to find a great mix, all we have to do is go find a few of our favorite songs. Then decide which of those songs you enjoy the 'Sound' of the most.

Whichever song you like the sound of most will become your **Reference Track**. This reference track will be your definite goal for a well-defined mix.

Your definite goal will be to match or exceed the sound quality of your reference track as much as you feel capable. If it seems you can't match or exceed the quality of your chosen reference track, that's ok because mixing is a gradual process of improvement.

All the most successful producers and mix engineers improved by referencing their favorite songs and paying close attention so they could eventually replicate that sound in their own music.

Most producers do this by keeping a copy of their reference track in their DAW session and listening back and forth between their track and the one they're matching.

# Part I: Equalization

## THE FRONT AND BACK MIXING PARADIGM

Your mix can be thought of as having two spaces where you can place your instruments.

The two spaces are the **Front** and the **Back** of your Mix.

When mixing, you want to decide whether an instrument will be positioned up **Front**, which means it sounds like it's close to the listener or if it's positioned in the **Back**, which means it sounds like its far away.

The best way to really sensitize yourself to whether things in your mix are close or far away is to listen with your eyes closed. This is because when our eyes are open they tend to dominate our perceptions and actually decrease the sensitivity of our hearing.

Here are some simple distinctions I've made between the **Front** and **Back** of my mixes:

### Instruments that are up **Front**:

1. Have more volume (louder compared to instruments in the back).
2. Have more high frequency content (compared to instruments in the back).
3. They tend to have less reverb because things that have lots of reverb get pushed further back than things which don't.

### Instruments that are in the **Back**:

1. Have less volume (**quieter** compared to instruments up front).
2. Have less high frequency content (compared with instruments up Front)
3. Tend to have more reverb than the instruments up front.

You're mixes will instantly gain more depth and clarity when you make a practice of being definite about whether you want something in the **Front** or in the **Back**.

# WHAT IS EQ

EQ is a shaping tool. In the same way a sculptor use a chisel, in the same way women use makeup to change the shape and appearance of their faces, we use EQ to shape and chisel the presentation of our instruments.

Sometimes we're not only altering the shape of a sound, but instead correcting the tonal imbalances within a particular instrument or sound.

You might have an instrument with too much bass or too little treble. In this situation you would use EQ to correct these imbalances.

So EQ has two primary uses:

1. To sculpt and shape the presentation of our instruments.
2. To control the balance between instruments.

To achieve this result there are two main approaches to EQ:

1. Cutting EQ
2. Boosting EQ

Your primary mission with EQ will be to create a pleasurable sounding balance between instruments. In order to achieve that, we want to follow our **Front and Back Paradigm**.

By deciding which sounds are going to be in the **Front** and which ones will be in the **Back** of your mix you'll immediately become more exacting with your EQ decisions.

In the following sections I will show you the specific ways to use cutting and boosting EQ to achieve a proper **Front** to **Back** mix, but before we dive into that we need to understand '4-Zone Mix Theory.'

## 4-ZONE MIX THEORY

4-Zone Mix Theory refers to the four main regions of sound we will be shaping and sculpting within our song.

Understanding these 4 zones allows us to figure out which instruments are competing for any given frequency zone and then make EQ decisions to only those instruments as **we improve the frequency balance within just that frequency zone.**

The 4 zones are as follows:

**Lows: 20hz - 200hz:** Bass, Kick and Snare located here.

**Mids: 200hz – 1khz:** The meat and body of most instruments lies in this range. It's important to be very selective about which instruments you allow to be dominant within this range or else you'll get a muddy mix.

**High Mids: 1khz – 5khz:** This is where the forwardness and presence of your instruments reside. This is our ears most sensitive range (in particular our ear is most sensitive to boosts and cuts @ 3khz)

**Highs: 5khz – 20khz:** This is where the Sizzle, Aliveness, High-Definition quality of our instruments comes from. If the mix is too sibilant, this is the range to look at.

When we start cutting and boosting with EQ we will be focused on making what are called Broad Strokes in these 4 frequency zones to achieve a well-defined **Front to Back Mix.**

## **BROAD STROKES FIRST**

It's simpler and more intuitive to start with broad approach because mixing is a gradual process of sculpting and refinement. It's more effective to start broad and then funnel down to something specific.

If at the broad strokes stage you can't get 80% of the mix you're after, then you just haven't made the right broad strokes and small precision type strokes aren't going to fix your problem.

When we're mixing with broad strokes we're going to be relying on **WIDE** EQ Cuts and EQ Boosts where our  $Q=1$  or less.

By using wide EQ boosts/cuts we can then decide where we want to boost or cut by sliding through each of the 4 frequency zones and deciding which one yields the greatest improvement to our sound.

You will see an immediate improvement in the clarity and definition of your mixes by beginning with a broad strokes approach.

## THE RULE OF 300

One of the most frustrating issues many producers encounter is a muddy or undefined low end in their mixes. Producers run into this problem because the instruments occupying the 20hz to 400hz frequency range of their mix are having a conflict catastrophe.

The reality is 20hz – 400hz is the most difficult frequency range for us to master because our hearing isn't as adapted to noticing details in it.

In order to avoid this temporary, but inherent weakness in our low end hearing there is one simple rule we can follow—The Rule of 300.

**The rule of 300 states that if it isn't bass, kick or snare, then you must high pass those instruments at 300hz or higher.**

The higher you can get away with the better for your mix.

This rule eliminates the main causes of a muddy mix because as you now know we run into this problem when our 20hz to 400hz range is swamped by too many competing instruments.

When professional mixers talk about balance they mean it as if there's a balance scale in front of you and so imagine on the one end there is something heavy, and the other has something light. And like the balance scale you must decide and be very selective about which instrument(s) are frequency 'heavy' and which ones are frequency 'light.'

Balance just means that it sounds pleasing to you, but when mixers talk about balance they mean that you're decisive about which instruments get to be frequency dense and which one's get to be frequency light in a given frequency zone.

By following this rule your mixes will immediately start occupying the top 5% of mixes out there.

## **EQ CONTROLS EXPLAINED**

High Pass Filtering (abbreviated HP): is used to remove unwanted low frequencies. It's something you'll use on virtually every track in your productions; especially because of the rule of 300 we just discussed.

Low Pass Filtering (abbreviated LP): is the opposite of high pass filtering. Generally low passing is used to remove unwanted high frequencies aggressively.

Cutting/Boosting (aka Peak Filtering): is when you take a bell shaped filter and use it to either subtract or add frequencies to a selected range.

Shelving Filters: are the ultimate broad strokes tool. I look at shelving in terms of whether I want to make something Brighter/Darker or Thicker/Thinner.

With a high-shelving filter set at 1khz or higher, I can easily make something Brighter or Darker sounding.

With a low-shelving filter set at 1khz or less, I can effortlessly make an instrument Thicker or Thinner sounding.

Unfortunately, the ease, effectiveness and power of these filters, cause them to be one of the most overlooked tools at a mixers disposal.

Q: is best understood as a way to adjust the sharpness of EQ curve. Different curves will produce different sounds. An interesting behavior is that sharper curves tend to be less transparent when boosting than their cutting variants.

## EQ IN ACTION

You probably already know on some level that mixing is mostly a subtractive art form. And so any good mixer will be using cuts about 80% of the time and boosts roughly 20% of the time.

The rule of thumb I hope you'll find useful is it's much better to cut too much from everything and then be very selective about where you restore fullness, than to not cut enough and get a mediocre and mucky mix.

Once you've got a lot of open space to work with, it's much easier to add frequencies back in, than it is to fit another person into a crowded bus so to speak.

There are 2 main techniques I rely on when I'm EQing my mix. As I've said before, I prefer to approach EQing in broad, even sloppy terms. It isn't necessary to be misled and think there is only one right way to EQ something, there are typically a few, and it's your job to find one quickly so that you can move on with it.

When I say quickly I mean that EQing is actually a messy and gradual process of refinement. That means it's really about little by little, sculpting and shaping our music into something we're gradually becoming more and more pleased with.

It's really helpful to understand that you're only making decisions as quickly as you're comfortable. And so make your decision comfortably fast because sticking in one place for too long risks overanalysis.

Over-analysis inhibits creative decision making and worst of all leads to increasingly worse decisions. That is why while mixing I like to use a technique I call Slingshotting.

# SLINGSHOTTING

Slingshotting works by using the 4 frequency zones we talked about earlier.

Here is the order of the technique:

Decide whether you want an instrument kept in the **Front** or pushed to the **Back** of your mix.

Then roughly set the desired volume you'd like your instrument to play at so its in **front or back**.

With a Q slope of 1, select a 4db boost if you want to bring it more forward and a -6db cut if you want to push it further back.

Now, while everything is playing move your cut/boost between each of the 4 frequency zones. Notice in which zone you experience the most pleasing change.

Once you've found the zone you like most, then you can configure the db amount of your cut/boost so it's more refined.

The idea here is to provide you with only 4 different choices instead of so many choices you don't know which to select.

Keep in mind that cutting more is better than cutting too little. Boosting too little is better than boosting too much.

When you're searching for a zone to cut and you find the right range you'll notice that your mix literally opens up and feels less congested.

The goal is to aim for openness and almost too much space between instruments because the real secret to a dynamite, 3-dimensional mix has to do with the space you leave unoccupied.

# THE REAL SECRET TO MIXING NOBODY TOLD YOU

*“The real art of mixing is about the “Frequency Real Estate” you don’t use, not the space you occupy.”*

Really what I’m saying is less is more.

Why is less, in fact more? My belief is because of how limiting/mastering works. There *is in fact..* a good reason people don’t notice how muddy their mixes are until they start limiting and mastering them.

It’s because limiters aren’t really loudness maximizers so much as they are intensity multipliers.

When we fail to aggressively cut frequencies we don’t need, then instruments start competing for dominance. If there’s too many instruments fighting for dominance in a given frequency range, then *when we go to limit our track we increase the intensity of those clashing frequencies.*

If our mixing were on point, then we would just be increasing the intensity of an open, clear, and definite mix which would sound absolutely wonderful.

So keep it clean, keep it nice and open.

## **FREQUENCY SWEEPING**

Frequency Sweeping is similar to Slingshotting, only whereas Slingshotting is meant to give you a result quickly and definitively; frequency sweeping is more surgical and precise and as a result it's more focused and time consuming.

Because it's more surgical and precise, frequency sweeping involves a very narrow Q with around + or - 10db of gain.

By using a very narrow Q you're able to microscopically zoom in to the specific points of the sound where you might be hearing a ringing or pinging, something which typically sticks out and annoys you.

It's easier to find the offending frequency on EQ's which have a built-in spectrum analyzer since the offending frequency will tend to poke out like a sore thumb from the rest of the frequency spectrum.

# Part II: Compression

## THE 4 TRUTHS ABOUT COMPRESSION

"If you don't know when to use it, then don't."

-Elitist Internet Forum Asshole

That tired, old advice always made me wonder how anyone ever learned to use compression in the first place? I never liked hearing people say it, but really what they were trying to say is **compression isn't what will make or break your mix.**

We want to begin to think of compression as more like the icing on a 5 layer cake. The 5 layers are great by themselves but maybe we want some icing to top it off.

There are 4 perspectives I've used to understand what compression really is and how to use it:

Compression is just an **automatic volume fader**. This is literally what a compressor should mean to you. **It's not compression, it's an automatic volume fader.**

Anything a compressor can do, volume automation can do.

Compressors are designed to make loud sounds quieter

A compressor is just a glorified **volume fader** (*I really want to drive that one home*)

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