Compressor Setup for Voice and Instruments

This tech tip will give you real world, practical information on how to set a compressor for various applications. We'll start with a very brief review of the compressor controls and then get right into it. You've probably also noticed that there are different operating designs of compressors e.g. optocompressor, VCA, variable Mu etc., and software variations as well. In the second part of this tip, we'll discuss what they're best used for. We assume that you've read the countless descriptions of what a compressor does.

There are basically two types of compressor, the leveling compressor and the limiting compressor. The only difference between the two is that limiting compressors have a separate threshold and ratio control, whereas the leveling compressor (also called leveling amplifier) has a single control for gain (or peak) reduction. With leveling compressors, threshold and ratio (slope) are interrelated and change depending on the input signal. While these compressors were initially designed for broadcast in order to control overall levels of program material, leveling compressors such as the Teletronix LA-2A and Summit Audio TLA-50 are in constant use in the studios for vocal and guitar tracking. For our purposes, we're going to limit ourselves to limiting compressors. (Well I couldn't say gain-reduce ourselves now, could I?)

Controls of the Limiting Compressor

There are four basic controls that affect compression. In no specific order, they are Attack, Release, Threshold, and Ratio. Put simply, Threshold tells the compressor when to work; Ratio tells the compressor how hard to work; Attack tells the compressor how fast to work, and Release tells the compressor when to stop working (or how long or short a time to return to its natural state).

Hard/soft knee: This is selectable in many compressors. It determines how gradually or abruptly output gain reduction occurs depending on the ratio. A soft knee is a gradual transition, which makes it more "musical" sounding, and particularly useful for vocals or any continuous material. It also allows higher ratio settings should they be necessary. A hard knee is good for explosive or percussive sounds, such as drums and heavy brass.

Makeup gain: This is essentially an output volume control. Its job is to counteract the gain-reduction effect of compression and give you the output level you desire.

How To Set a Compressor For Tracking

These are your basic ballpark, jumping-off-point settings that will work for just about any application. Naturally, the settings you wind up with in your work will vary based on the music and the response of your equipment.

Setting the Ratio: Rule one: Don't squash (unless there's a crying need to, or a creative reason). Start with a ratio between 2:1 and 4:1. A ratio of 3:1 is good if your compressor allows or has a variable ratio control, such as the Tube-Tech CL1B.

Setting Attack: This setting will vary depending on what you are compressing. Start with a relatively fast attack time (around 25ms).

Setting Release: This control will vary the most. Start with a medium release (50-100ms) and be prepared to adjust. Too short a release will give you an unnatural pumping effect, and too long of a release will prevent signals from returning to normal levels soon enough, causing subsequent notes not to sound as loud as they should and a dull overall mix.

Setting Threshold: As you run signal (your track or instrument) through the compressor, start to adjust the threshold control (usually counterclockwise) until you see the gain reduction meter read a consistent –2 to -3dB of reduction. That should be sufficient compression to handle most tasks while leaving a decent dynamic range. Another common setting for vocals is to set the ratio at 2:1 and threshold such that no gain reduction occurs during soft passages, with 3dB to 6dB of gain reduction during normal singing.

Review

Putting it all together, the general, applies-to-all-areas setting for tracking with compression is a relatively fast attack, medium-fast to medium release, ratio between 2:1 to 4:1, and threshold set for a fairly constant 2dB to 3dB of gain reduction. This is a basic starting point that will work effectively with almost any compressor for almost any application. In the next part of this tip, we'll discuss various types of compressors, give you problem-solving and creative applications, and settings that are good starting points for different instruments and vocals. See you next week!