



Compressor Applications

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Signal Processing

Introduction

This tech note is meant to demonstrate some example compressor settings on various instruments. These are merely suggested settings, but they can help you to get started if you are new to compression or need help finding a particular sound.

Vocal Limiting

Vocalists tend to be one of the most dynamic recording challenges in any studio or stage. Even though a singer may go from a whisper to a scream during the course of a song, it's the engineer's job to keep the vocal's level in line with the rest of the ensemble. You can do this by setting the compressor with a high ratio and a high threshold. This way, softer sections will go by uncompressed, and louder peaks will be kept under control.

- Threshold set so that the loudest sections get around -6 of reduction(usually around 3 o'clock)
- Ratio set for 6:1
- Knee set for Soft
- Peak/RMS set for RMS

The Threshold should be set so that loud sections get compressed around 6dB and quiet passages get no compression at all.

Vocal Compression and Spoken Word

In other cases, you may want to compress the entire dynamic range of a vocal. This is typical of pop vocals and voiceovers for radio commercials. Whenever there is signal, there is some compression taking place; just barely on the soft passages, and up to 12 dB of reduction during loud passages.

Threshold set so that one REDUCTION LED (-1 dB) lights during the softest passages with signal (usually around 11 o'clock)

- Ratio set for 2:1
- Peak/RMS set to Peak
- Attack set to 0.1 ms (7 o'clock)
- Release set between 10 and 12 o'clock (100 ms.)
- Raise output to compensate for gain reduction

Drums

Engineers often compress drum tracks just to get a nice punchy sound in the mix. The settings below

sound good on a rock snare drum:

- Threshold set so that all drum hits are compressed (around -3dB)
- Ratio set for 4:1
- Knee set for Soft
- Peak/RMS set for Peak
- Attack set around 8 o'clock
- Release set around 9 o'clock

By turning the Threshold down even more, you can "squash" the snare drum as much as you want. Turn the attack up (longer) to get more stick out of the snare drum, and turn it down for a synth pop slap.

Bass

Since bass guitar forms the foundation of most Rock and Jazz music, it's important that the level of the Bass doesn't jump around in the mix. Also, adding compression to bass tracks (or almost anything else) can make it "punchier", generally a good thing in rock tunes. Try the settings below on a rock bass track:

- Threshold set so only the peaks are compressed (around 0dB)
- Ratio set for 4:1
- Knee set for Hard
- Peak/RMS set for Peak
- Attack set around 9 o'clock
- Release set around 10 o'clock

Electric Guitar

Funky rhythm guitar parts love compression. Not only does it make the part punch out the mix better, it evens out the volume of the muted strums. The following setting, with its low threshold and high ratio, gives you lots of compression for punching up a funky rhythm guitar part:

Threshold set for constant compression (around -3dB)

Ratio set for 6:1

Knee set for Soft

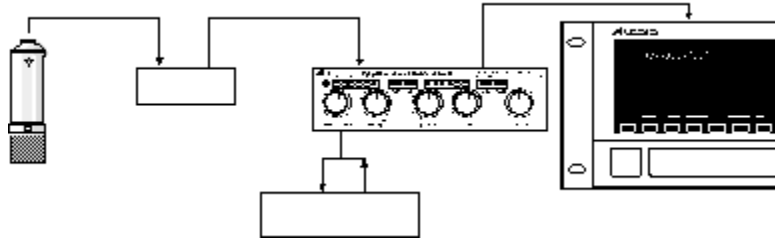
Peak/RMS set for RMS

Experiment with turning the Threshold up or down for a thinner or chunkier tone.

De-Essing

Occasionally when recording vocals, the letter "s" seems to jump out louder than the rest of the part. This is because sibilant letters, especially the letter s, have more high frequency energy than other letters. This can cause tape recorders or other components to distort, even though the level may not seem very loud. This "sibilance" can sometimes be eliminated by moving the microphone, but often a de-esser is required.

Many compressors allow you to perform de-essing on a track by using a sidechain. By placing an equalizer in the sidechain, you can set the compressor so that only certain frequency ranges trigger the unit to start compressing.



[Diagram from [NanoCompressor Manual](#): De-essing (p.22)]

The trick is to set the EQ to cut all frequencies except for the sibilant range, between 3-6kHz. Then set the compressor like this:

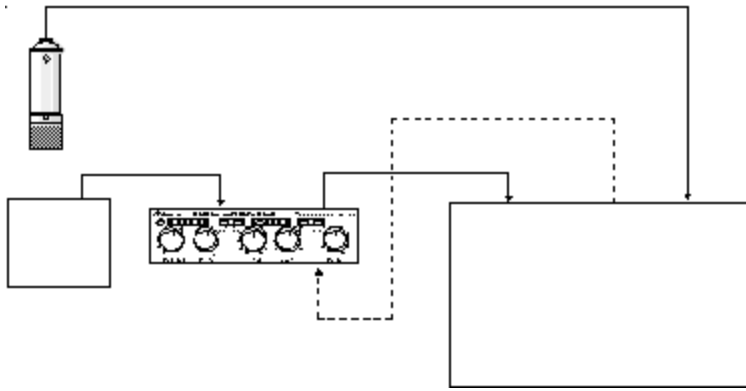
- Threshold set around 0dB
- Ratio set for 6:1
- Knee set for Hard
- Peak/RMS set for Peak
- Attack set at minimum (0.1ms)
- Release set around 8 o'clock

The Threshold should be set so that an "s" triggers about -3 to -6 dB of compression. If other sounds are triggering the compressor, you might need to adjust the EQ cutoff frequencies.

Ducking

Ducking is often used when doing voiceovers. It allows background music to automatically be turned down whenever an external source, such as an announcer's voice, begins to speak. You can also use ducking to have one instrument push the other out of the way, such as the bass guitar ducking every time the kick drum hits.

To make the compressor into a ducker, plug the source into the inputs and plug the trigger into the sidechain. The Sidechain return (the ring connection) isn't used in this example. In the example below, the sound of a radio announcer's voice will automatically turn the music down when he speaks and it will slowly fade back in after he stops:



[Diagram from [NanoCompressor Manual](#): Ducking (p.23)]

Set the compressor controls like this:

- Threshold set for +3dB (around 3 o'clock)
- Ratio set for 6:1
- Knee set for Soft
- Peak/RMS set for Peak
- Attack set around 9 o'clock
- Release set around 2 o'clock

Plug the announcer's mic into the mixer, and feed that mic to the compressor's Sidechain in. When the announcer speaks, the music will duck down (turn the ratio up to duck it even lower). When he finishes speaking, the music will fade back up at a rate set by the Release knob.

[Keywords: compression, examples, application, vocals, bass, guitar, drums, snare, de-essing, ducking, sidechain]

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