

TECHNIQUES FOR RECORDING DRUM SET COMPRESSION



by Chris Munson

Overview

Compression is a difficult subject to tackle and one that comes with a wide array of opinions on usage. During the time that I have been doing studio work, I have yet to find two engineers that have identical views on how to utilize compression. In fact, my own opinions on this subject have changed drastically over the years from aversion to reliance on these devices. Typically debates on compression center around when to use it and how much of it you should use.

Before we dive into how compressors work, let's examine the four components of sound: attack, decay, sustain, and release. The attack is the time it takes a sound to reach its peak volume. A rim shot will have a quick attack while a cymbal swell will potentially take much more time to peak. At some point, the sound begins to make its descent (decay) to a volume that is maintained for a period of time (sustain). After a sound has sustained it will eventually fade out either fairly quickly, slowly, or somewhere in between. This is known as decay. When you consider that all sounds are made up of these elements, compression begins to make more sense. In simple terms, a compressor is used to stabilize a sound. If a sound has a wide dynamic range it can often be difficult to place it in a mix. This is because you can only raise its volume so far before the attack begins to create distortion. By leaving enough dynamic space to avoid distortion (headroom) you may in fact create a disparity in the sound whereby the subtler aspects of it are lost in the mix. The more instruments or sounds present in the mix, the more this will be the case.

This is where compression comes into play. The compressor stabilizes the sound by reducing its overall dynamic range. That is, the peaks or louder elements of the sound are sort of suppressed and forced to stay dynamically closer to the quieter or subtler elements of the sound. In a classroom setting I generally demonstrate this with the bass guitar. When isolated without compression it typically sounds fine. However, when placed in a mix without compression it becomes evident that the low end notes are much more prominent than the high end notes which inevitably seem to get lost in the mix.

Think about the two major time keeping elements of the drum set (snare and kick). They are both complex beasts and we often focus on them when listening to a mix. The kick contains the sound of the pedal striking the head, the low-end punch of the shell, and the resonant harmonics that linger after it's been hit. The snare contains the sound of the stick striking the head, the ring of the shell, and the sustain created by varying tension on the snare strainer. Over time we take this sort of stuff for granted because we initially invest countless hours fine tuning the sound of our kit so that we are only left with minor maintenance. However, when we are recording the engineer is left with the job of capturing and reproducing all these subtleties with an accuracy that is satisfactory to us.

How Compressors Work

Depending on what you have at your disposal, you may find yourself with a compressor that has only two knobs or one that has ten. All compressors work on the same principles and generally offer you the ability to adjust the ratio, threshold, attack time, release time, and output gain. Once you understand how these controls work you can then begin to use compression effectively and even experiment to get more drastic and unique results.

The threshold is the point when a sound gets compressed and is directly linked to the ratio. Threshold is expressed in decibels and can be thought of as a sort of ceiling for the sound. If the sound source goes above the ceiling it will be compressed. The ceiling can be raised or lowered. The lower it is the more compression takes place.

The ratio is the rate at which the sound gets compressed when it crosses the threshold. It is expressed in numeric values such as 2:1, 4:1, 5:1, and even ∞ :1. For instance, if a sound goes 15 db over the threshold and is compressed by a ratio of 5:1, it will only be allowed to go 3 db over the threshold. The higher the ratio, the more drastic and noticeable the compression. Attack and release time also affect the sound. They are expressed in milliseconds or seconds. Attack time determines how quickly or slowly a sound is compressed once it passes the threshold. Release time determines how quickly or slowly the compressor stops working once it has been enabled. You want to make sure you set the attack time quick enough to suppress the incoming signal and set the release time long enough so that the compressor does not stop working while the sound is still above the threshold. If that happens you will hear a pumping sound (almost like a tremolo) caused by erratic changes in dynamics.

Finally comes the output gain or makeup gain. Compressors are part of the dynamic or volume based family of effects. When you use compression you are reducing the overall dynamic range of a sound. The output gain is used to restore the sound to a level that is audible in the mix. When all of these tools are used correctly, you create an illusion of making the sound more 'up front' or present in the mix.

In the following recorded examples I will A/B individual drum tracks (kick, snare, and overheads) as well as a mix of the four tracks. You will hear the uncompressed sound (A) followed by the compressed sound (B). I will include examples ranging from subtle to drastic compression.

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INSERT AUDIO FILES:

Kick Aggressive Compression Ex.mp3
Kick Light Compression Ex.mp3
Kick Moderate Compression Ex.mp3
Snare Aggressive Compression Ex.mp3
Snare Light Compression Ex.mp3
Snare Moderate Compression Ex.mp3
Overheads Aggressive Compression Ex.mp3
Overheads Light Compression Ex.mp3
Overheads Moderate Compression Ex.mp3
Overall Compression A-B.mp3

Chris Munson is currently the Director of Recording Arts at Eastern Kentucky University where he teaches courses in music technology and applied drum set. He has been a professional musician and audio engineer for over 15 years. Over that time he has recorded or performed with: Don Aliquo, David Amram, Darol Anger, Danny Barnes, David Carradine, Vassar Clements, Jeff Coffin, Joe Craven, Jerry Douglas, Tom Harrell, Jorma Kaukonen, Jon McEuen, Tim O'Brien, Greg Osby, Anders Osborne, Merl Saunders, Jamey Simons, and Trout Fishing in America. Albums he has appeared on have earned numerous awards including two Grammy nominations.