

Session 2

Utilizing Compressors and Effects Processors



PRECISION **AV**

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Compressors and Effects Processors

- Understanding Compressor Controls
- Using compressors on Vocals - Singing and speech
- Compressors on instruments
- Routing effects processors
- How to control individual channel volume and overall effects volume
- Different types of effects processors - The basic ones
- Settings on an effects processor and tone control

Compressor Controls

- Gain controls incoming volume
- Threshold is when the compressor kicks in
- Ratio is how many db above the threshold you must go to increase volume by 1 db
- Attack is how long it takes to do the full compression ratio after threshold is reached
- Makeup is used if you have heavy compression to compensate the volume, just a straight volume increase



Compressor Controls

- Release is how long until back to 1:1 ratio after sound level drops back below threshold
- Knee is at the threshold does it go straight to set ratio, or slowly transition into the full compression ratio at the threshold (hard is immediate, soft would be at -3db from threshold it is at 25%, +3db 75%, -6db no compression, +6db full compression)



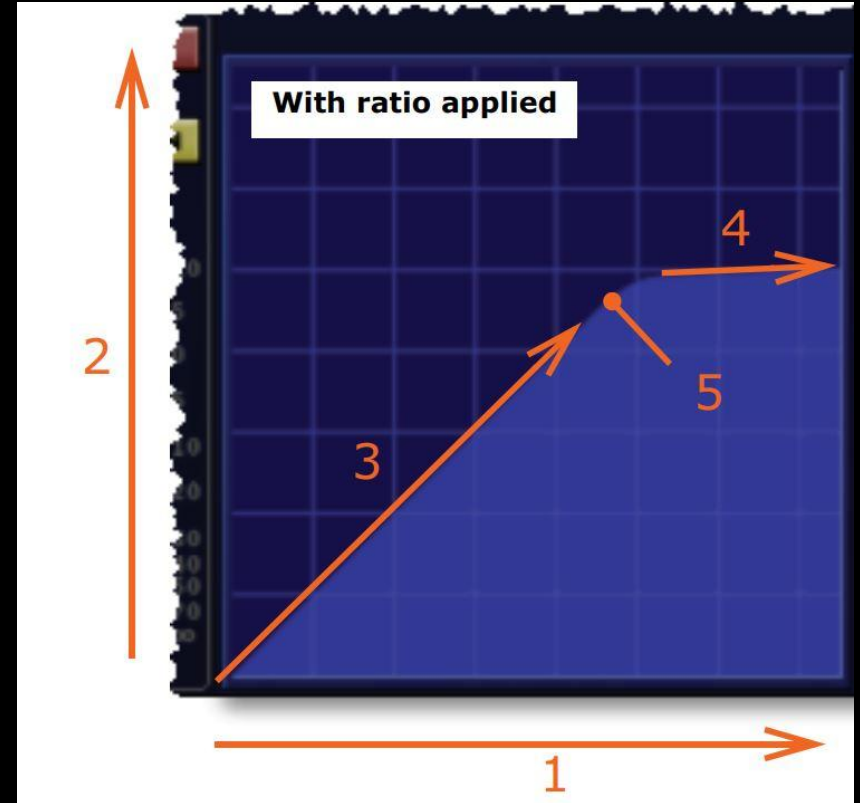
Compressor Controls

- Key is the bottom part
- Determines a specific frequency range that the compressor samples for the threshold
- Generally used on gates but not compressors which will be covered in the drums section



Compressors Visualized

1. Input level, X axis
2. Output level, Y axis
3. Output below threshold at 1:1 ratio
4. Output above threshold at set threshold
5. Threshold, where the transition happens from 1:1 ratio to 1:X ratio



Compressors on Vocals

- Used to reduce the unevenness in volume that can be caused by
 - Breath control, especially noticeable with singers playing instruments as their arms move
 - Mic placement, singers can tend to not keep a perfect distance from the microphone
 - Key/Tone change, singers tend to sing louder or softer in different keys that they struggle with
- Be careful of compressing too heavily, know your equipment
 - Heavy compression with a hard knee especially you can hear when it kicks in
 - Tone can shift especially with lower quality equipment, this happens in the higher frequencies
 - For live audio try to keep below 4:1 ratio as a general rule, 2.5:1 is a great place to start
 - Use attack, release and knee to make the transition not noticeable, great live compression no one knows it is happening
- Beware feedback if you are pushing near the threshold before compression
 - If you compress you have to run your fader higher to achieve the same volume, so when the input volume drops and you drop below threshold you are running hotter than normal

Compressors on Instruments

- Most instruments will not require but some of the exceptions where compressors can really help you out are:
 - Guitar strumming being too loud
 - Change in tone - distortion pedals, keyboard sounds especially when they have a synth background but the foreground sound is too loud
- Keep your ratios lower with instruments than vocals generally, and threshold higher, you are looking to cut off peaks not change the sound as much as with vocals, good rule of thumb is 1.7:1 - 3:1
- Generally extremely fast attack and release on instruments, with a harder knee, can even use a straight hard knee often

Routing Effects Processors

- Most commonly used method is called an Effects loop, you route an aux send to the effects processor input, and the output to a channel or aux return channel
 - Use post fader on your aux send, you want the effects level to change as you change your mix
 - The return channel/aux return you want to have at least a 4 band parametric EQ available on, some aux returns do not offer any processing
 - Set your aux out master to 0 dB

Controlling individual channel volume and overall volume of Effects Processors

- Mix in the channels post fader into the aux channel that you wish
 - I generally run different effects on background and lead vocals to create separation in the mix
 - The loudest channels you generally want at 0db which will be explained under the overall volume
 - I generally use 4 effects processors with more added in when needed, 2 for vocals(1 lead 1 backup) 1 for snare and 1 for toms, start with vocals as they benefit the most and are easiest to set
- Use your channel/aux return volume to send it into the mix
 - If you set your aux out to 0 db, and the channel in to 0db, based on where you run the fader you have a good idea how much you are adding to the mix, for example -12db would be 12db under the primary sound of a vocalist. By using this method you will get a relative sense between your different effects processors and what you are hearing in the mix

Basic types of effects and when they are used

- Delay - Do not use, this is a single playback of the sound 1x and was used to delay speakers when required before delay units were widely available
- Reverb - Is a function of all the effects you will use regularly but this has no change to the sound, it would be like yelling in a canyon where you hear yourself back perfectly several decaying times
- Plate - Created by playing a speaker onto a steel plate into a reverberant room, highlights the higher frequencies, used on vocals to make S, Ts Cs, and other sharp consonants stick out, often great on female vocals in slower songs
- Hall - Highlights the mid frequencies, great for vocals instruments and drums as it can often sound like your room, just more reverberant

Basic types of effects and when they are used

- Room - Highlights frequencies around 800-1.5k, rarely used as it often makes the definition range of voices and instruments become muddled
- Chamber - Highlights mid lows in the 160-400 range, used on instruments and drums more often than vocals because it can make voices sound muddled
- Plenty of other types, feel free to experiment with them after you get some experience using the basic types, one example for me is using the “vintage” types you can find in digital consoles which have more of a tube sound to them where especially the highs get skewed a bit, hard to explain but experimenting is key

Settings on an effects processor

Settings can vary in what they are called or if they are even available on different effects processors. The basic settings are covered here as they are available on most units.



Settings on Effects Processors



1. Decay time of low frequency - Not eq, but simulates instead how a room would absorb sound in the LF
2. Decay time of high frequency - Like above
3. Room Size - Determines time between reverb returns, example is a small room you hear yourself in rapid succession, large room more spread out
4. Decay - Time from full volume to 0 volume, often set between 1.1 and 1.8 seconds

Settings on Effects Processors



5. Reflections Level - Simulates the distance from the sound source and the listener, are you all the way on the other side of the simulated hall or standing right next to the person

6. Reflections Pattern - Changes frequency of early reverberations in the room(for example from a wall you are standing closer to)

Settings on Effects Processors



7. PreDelay - How long before you 1st hear the reverb, used to create separation so you do not interfere with the initial sound as much. You can greatly increase the definition of vocals by setting this around 60-70ms, too short and the reverb runs over the initial sound, too late and it sounds unnatural

8. Select your reverb - Push the buttons to scroll between the types described previously

Settings on Effects Processors



9. Wet/Dry knob - Used to be used when people routed individual channels or whole submaster/vca groups through an effects processor, wet is how much effects are sent and dry is sending the initial sound. When using an aux effects loop you want to run 100% wet

10. Stereo or mono mode, using an aux effects loop you will be running mono

Settings on Effects Processors



11. Shows the value above all the previously described settings

12. In/Out button - In is effects working, out is the effects are bypassed and just sends signal through, watch for this if your effects processor appears to not work regardless of other settings

13. Level - Usually set at 0 so you can use the mixing method described before

Tips for getting started

- Start with effects just on the lead vocalist, keep it simple when you start
- Hall reverb usually will sound the most natural for your room, start by just adding depth to the vocals instead of adding an unnatural effect to enhance the sound
- Use your headphones liberally to hear what you are adding and mix it in slowly
- Start by adding them during practices before you go live, it will take a little bit of time before you are comfortable using them
- During our last session when we are setting up mixes and using more than just volume changes to change the sound between songs you will learn practical applications of the effects processors

Questions



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