

# Session 3

Stage Volume, Gates and Drums



**PRECISION AV**

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# Stage Volume, Gates and Drums

This section will be done with live practical applications more so than the other sections, drums are not as straightforward and the nuances can not be covered with just the slides as much as previous sessions

- Utilizing monitors on stage and controlling their volume heard in the audience
- In-Ear monitors, the perks and difficulties
- Using channel delays with live drum sets and instrument amplifiers
- Understanding Gate Controls
- Mic placement on drums
- General drum micing guidelines
- Tone control on drums using a mix of EQ and gate settings

# Controlling stage volume while using monitors

- Floor wedges tend to cause the most issues as they are placed to the front of the stage and are on the floor further from the performer so have to be run louder
- Placing a floor wedge at 45 degrees from the performer reduces reverberation off of a flat wall behind the performer if it is too close
- A floor wedge controls its throw better at higher frequencies, you can often use an EQ to cut sub 400hz frequencies making it sound less natural, but also reducing volume thrown into the crowd
- Make sure listeners are centered on the cone throw, you lose 6db if they are to the side or up or down of center

# In-Ear monitors

- Removal of live stage monitors will reduce your stage volume drastically
- Individual listeners can control their own master volume, and it is easier to give key positions like lead singer an individual mix without them hearing anyone else's mix such as background singers near them
- Biggest downside is expense, generally for singers you need to go wireless which is not cheap
- People using in-ears have a harder time hearing ambient noises so the mix matters more, using a personal mixing system where they can mix themselves reduces the workload of the audio tech considerably but has the downside of costing more

# Other effective ways of removing stage noise

- Move electric/bass guitar amplifiers into a back room, or put them in front of the performer pointing backwards, generally bass guitar amps can be removed as you run a direct box, while electric guitars you mic the amplifier
- Drum cages in small rooms are extremely helpful. A full cage that covers front sides top and back is recommended as if you use just a front cage reverberation off of the back wall and ceiling tends to highlight cymbals and can become uncontrollably loud
- If a drum cage isn't an option try using drum dampening pads which can be picked up at instrument stores or online to deaden snare and cymbals as they tend to be the biggest offenders

# Matching the mains to the instruments

- If the aforementioned methods can not be used to reduce the stage volume and it is still impeding heavily on the front rows you can set a delay either on the entire system or individual channels to match the sound coming from the back of the stage to the main system to increase clarity
- If using a master delay make sure the instruments and drum mics are as close in distance to the front as possible
- Generally with short stages you can use individual channel delays in order to just delay the select channels, and the amount will be small enough that they will still be in time with the rest of the band, remember that the issue was hearing the instrument 2x in the 1st place with 1 of the times being milliseconds out of time anyway, this is a fallback if you can not get enough control on stage volume, controlling stage volume is strictly better

# Gate Controls

3. Threshold - below threshold sound is reduced by #6 Range dB, above threshold 100% of sound is let through

4. Hold - How long full volume is let through after volume falls below threshold

8. Release - How long sound fades from full volume to reduced by range volume after falling below threshold

7. Attack - How long after sound goes above threshold the sound fades from reduced by range to full volume



# Gate Controls

Key section on bottom of picture makes gate open from specific frequency range of the input

- Great for making specific drum mics only open for the drum they are supposed to be micing, Ex. 180hz might be right for low tom but 400 hz for your mid tom, hitting 1 will not open the other
- Controls are
  - In brings the keyer in or out, if out listens to all frequencies
  - Width controls how wide the frequency range from the knob selected on the right
  - LSN stands for Listen, you can hear what frequencies you are sampling in your headphones



# Micing your drums

- Microphone selection and placement is extremely important
  - For kick drum use a large diaphragm microphone that can pick up the lows, if possible you want the mic to be placed inside the drum. Personal favorite Shure Beta 91
  - For snare you can determine how much initial punch you have by placing the mic closer to the head and pointing to middle, or less punch and more snare sound by pulling it back and pointing closer to edge, I personally prefer to use 2 mics one on bottom and one on top, if you do this make sure you phase reverse the bottom microphone. Personal favorite Shure SM-57
  - Toms use a larger diaphragm microphone if possible for a floor tom, you can control the initial hit noise the same as on the snare, but generally want to always pick up more from the middle than edge unlike a snare, Personal favorite Shure SM-57
  - Cymbals you want the mic reasonably close but not too much, the larger the cymbal the further off the cymbal you need to mic as the sound is formed from the entire head, if you get too far off you will pick up everything, Personal favorite Shure SM-81 or Beta 98

# General gating guidelines for drums

- Main reason to gate drums is to stop the drum from ringing out, make individual hits sound tighter. Drums also make noise when other pieces of the set are hit due to the strong vibrations from the set
- Threshold should be set so that on softer hits the gate still opens, but as tight as possible to that point
- Attack is used to control how much initial stick hit you get, the higher the attack value the less initial stick hit noise
- Release and hold are used to control how much resonant noise you get from the drum, toms and snare you should have sounding natural without excessive time ringing out, kick is generally run fairly tight

# Tone control of drums using EQ and gates

- You can make a drum sound softer during quieter songs by increasing the threshold, increasing the release, and increasing the attack, but more punchy on fast songs by doing the opposite
- Depending on distance of the microphone to the drum head you create a resonant frequency that sometimes is not the same as the drum being mic'd, if you hear this use the EQ to cut the required frequency, if not the drum will sound out of tune
- You can control stick hit and the resonance of the drum balance by boosting or reducing the frequencies of each, stick hit generally is 800 hz to 1.8khz, the resonant frequency of the drum varies
- Make sure cymbals are full range, cymbals generally create sound from 400hz all the way up to 12 khz, don't neglect how full range they are

# Questions



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