**Frequency** measured in cycles per second (cps), typically referred to as Hertz (Hz)

**Band**: a range of frequencies.

**Q**: determines the range of frequencies, or bandwidth, affected by the EQ. A low Q selects a wider bandwidth and a high Q selects a narrow bandwidth. A high Q helps if there’s a particular frequency that needs eliminating, a low Q helps to shape the tone of a sound.

**HPF**: High Pass Filter, or Low Cut, filters out all frequencies below the set frequency. “Rolling off the lows.”

**LPF**: Low Pass Filter, or High Cut, filters out all frequencies above the set frequency. “Rolling off the highs.”

**Bandpass Filter**: when both the HPF and LPF are enabled. Can be as wide or narrow a bandwidth as you want.

**Shelf**: Boosts or lowers all frequencies above or below the set frequency. Useful when HPF or LPF are too extreme for the sound.

**Attenuate**: to reduce in level

**Roll off**: to reduce in level down to zero
**Compressor Controls & Features**

**Knee**
This compressor has an adjustable knee. This allows you to choose how drastic you want the compression effect to be. Generally, a soft knee (more of a slope than a sharp angle) is used for compression and a hard knee is used for limiting. The compressor above does not have an adjustable knee.

**Ratio**
This function allows you to choose by how much the signal exceeding the threshold will be compressed. So the ratio and the threshold are very closely related. 1:1 is nothing, 2:1 is very light, 3:1 is a standard place to start, 10:1 is the point when the compressor becomes a limiter. Limiting is just extreme compression. The compressor above has four fixed ratios to choose from, while this one allows a range of choices.

**Gain**
Because a compressor turns the loudest portions of a signal down, the overall signal gets quieter. The Gain function allows you to turn the signal back up, to an even louder level than you could before. The Output control above plays the same role.

**Release**
How quickly the compressor stops compressing the sound. Too slow a release and the signal may be compressed for too long. Too fast a release can cause a pumping effect, especially with sustained sounds.

There are no standard attack and release settings. Every compressor is different. You’re going to have to really use your ear to find the right settings for each signal you’re compressing. If you’re not sure where to start, set the ratio and threshold first, then experiment with the attack, and then the release.

**Threshold**
How much of the audio you’re compressing. Just the peaks? Most all of the audio? Adjust this until the desired amount of signal is being compressed. You can tell how much signal you’re compressing by the Gain Reduction, or GR, meter. For a more natural sound, you should see the meter moving, but generally not past -3. The Input control on the compressor above plays the same role as the Threshold (Thresh) control here.

**Side-Chain**
Many compressors allow you to side-chain compress, meaning you use the signal of one track to trigger the compressor on another track. The HP/LF filters are for if your trigger signal is frequency dependent. The compressor above offers the same option, but without the EQ section.
As with all time-based effects, Delay should be placed on an Aux track and signal should be bussed to it. That way, multiple tracks can share the same delay and CPU power will be saved for other resources. Place directly on an Audio track when you have a specific reason to do so.

**SIGNATURE SOUNDS**

*By adjusting the Depth and Rate controls, you can make the Delay into a Phaser, a Flanger, or a Chorus effect.*

---

**DELAY**

Sets the timing of the delay, measured in milliseconds. To set the delay timing, find your bpm and look up a delay timing chart.

**MIX**

How much Wet sound and Dry sound is present in the mix. 100% is fully wet, 0% is fully dry. Adjusting this can lead to interesting results.

**RATE**

Controls how fast or slow the modulated signal oscillates, which affects how phasey the delayed signal sounds with the dry signal.*

**METER**

Set this if your song is in any other meter but 4/4. Don’t know? It’s probably in 4/4.

**TYPICAL DELAYS**

- **Short:** barely perceptible as a separate sound, anything under 60ms. Causes comb filtering.
- **Slapback:** gives that stadium-rock feel. Used to fatten up a sound.
- **Medium:** use this if you want to hear a word or two repeated.
- **Long:** use this if you want a whole line repeated.
- **Ping-pong:** the delay seems to bounce between the left and right channels.

**DEPTH**

How “deep” the modulation of the delayed signal gets*

**INPUT POLARITY CONTROL**

If you want to inverse the polarity (flip the phase) on a track.

**LPF**

Low Pass Filter - attenuates the high frequencies of the repetitions, giving them a dulled, muted sound. This is a major characteristic of Tape Delay.

**FEEDBACK**

Controls how many repetitions of delay you hear. There’ll be 1 repetition when it’s set to 0% and a massive feedback loop when it’s set to 100%. Setting the LPF can be a nice effect when the Feedback is turned up.

**DURATION**

Does the same thing as the Delay control, just in musical terms. It also gives you the option to make the delay length a dotted note or a triplet.

**TEMPO SYNC**

Turn this on if your song has a variable bpm. This syncs up the delay and the tempo of the track.

**GROOVE**

Can add “swing” to the delay timing by offsetting it slightly from the tempo.
REVERB CONTROLS & FEATURES

PRE-DELAY
Adds a space between the dry sound that triggers the reverb and the reverberated sound itself. When turned up, it can create a delay effect due to the time between the initial sound and the reverberated sound. Can be nice on an instrument you want to stand out but still be reverberated, like vocals.

GAIN
If the incoming signal is too quiet or too loud it can be adjusted here. The goal is to keep the signal from clipping.

DIFFUSION
Diffusion controls how quickly the sound transitions from early reflections to total reverberation. Keep this setting high unless a specific special effect is desired.

MIX
Let’s you balance dry sound (original sound) and wet sound (the reverb). Unless placed directly on an audio track or for some other reason, keep this ratio at 100% wet.

LP FILTER
Basic low-pass filter that rolls off the highs of the reverb.

HF CUT
This sets what high frequencies start to drop off first within the reverb as it decays. This gives the reverb a more natural sound.

REVERB
Most all digital reverbs give you plenty of presets to choose from. Hall, Church, Plate, and Room are common presets, along with Spring. From there you can choose the size of the reverb: Small, Medium, or Large. This is where you should do the majority of your experimenting.

DECAY
Adjust this setting if you like the sound of the reverb but want it to last longer (increase) or end sooner (decrease).

It’s recommended that Reverb and other Time-Based effects be placed on an Aux track and audio be bussed to it, rather than placing it on an Audio track itself. This saves on CPU, allowing you to use more plug-ins.