

TECH NOTE #103 Effects Loop Overview

There are essentially two common types of loops on guitar amps, series and parallel. Both are explained below.

Series Loop:

Basically an insert patch point. When an external effect is patched into the series send and return jacks, the path is interrupted and 100% of the signal is routed through the effect. This puts some special demands on the effects unit. It must be essentially transparent, meaning it shouldn't "mess" with your tone. The input and output levels must be properly set for maximum headroom and lowest noise. Proper setting of the levels can be achieved using the following method:

1. Set your amp/preamp volume levels for normal playing levels. Connect a high quality shielded cable from the series send jack to the effect input.
2. Adjust the effects unit input level to "just peak" while playing your most aggressive licks.
3. Now connect another high quality shielded cable from the effect output to the return jack.
4. Adjust the effects unit output level to match the volume you heard before connecting the return cable. You can check this by pulling the cable in and out of the return jack while playing and verifying there is no substantial volume difference. This is called "unity gain". A cool "techie" phrase for "you get out what you put in". If your effects gadget does not have level controls, it can be assumed you will get unity gain when plugged in.

Parallel Loop:

This is a more specialized loop. It has the advantage of maintaining your dry signal (it doesn't mess with your tone), while allowing you to mix in the amount of effect you want. The Egnater parallel loop is a bit different than most. Typically, parallel loops found on most guitar amplifiers have a wet/dry mix control that turns down the dry signal (messing with your tone) while simultaneously turning up the effects level. The Egnater parallel loop is unique in that it never messes with your dry tone. It simply mixes in the amount of effect using the effect knob on the front panel, much like the effects buss on a mixing console. The direct signal remains unaltered and the effects are simply mixed back in.

There are a few basic rules that must be adhered to. This also puts some limitations on the specific uses for the parallel loop:

- 1) Very important, your effects unit must be set for 100% wet. This means to set the mix levels on the effect so that there is no dry signal passing through the unit. Think of the mixing console. You would not want to have any dry signal going through the effects buss because you would then be mixing in not only the effect but also the unwanted dry signal that comes out of the effects unit. This can even be detrimental to your tone because the dry output signal of many effects units is out of phase with the input. Consequently, as you turn up the effects return knob, you may actually be mixing the "icky" out of phase signal back in with your awesome dry signal and...you guessed it....messing with your tone. Often loops on guitar amps are said to "suck tone". This "tone sucking" is more likely caused by improperly setting the effects mix than the loop design.

Now let's address the specific uses, advantages, disadvantages and limitations of each type of loop.

- 2) The series loop, by nature of the fact that it breaks the direct path and processes 100% of the signal, makes it so that essentially any effects gadget will work. You can use echo, reverb, noise reduction, tremolo, equalizers etc. in this loop. Remember to follow the procedure for setting for "unity gain".

Series loop advantages:

Works fine with just about any effect.

No special requirements, other than the "unity gain" settings, are needed.

Basically Plug and Play.

Disadvantage is that your entire signal passes through the effects unit and may.....mess with your tone.

The parallel loop, on the other hand, has more limited uses but has the distinct advantage of not messing with your tone in the same way. This loop is ideally suited for what are called "time based effects". This includes echo, reverb, chorus, flanging. These types of effects work in parallel with your direct signal (think about the mixer again). Now the bad news...remember the dry signal is always present. You cannot use effects that require processing 100% such as equalizers, noise reduction/gates, tremolo or compressor/limiters.

Parallel loop advantages:

Doesn't mess with your tone.

Disadvantage is the limited uses and may require reprogramming your effects unit for 100% wet.

Special Notes:

- A concern is the fact that many multi-effects units have a combination of all of the different effects. This means, using the parallel loop, you must be aware of which effects can and can't be used. For ease of operation, we recommend using the series loop if you intend to use a mix of different "time based" and non-time based effects in one unit.
- Many loops are designed for line level operation, or at least higher than normal guitar level. Though some floor type and tabletop effects may work, many loops are designed basically for rack mount type effects units, not guitar level floor pedals. You will know an effect is not made for high level if, when you plug it the effect into the loop, you notice distortion and/or a loss of volume. If you do experience a distortion problem with effects, this can often be remedied by reducing the master controls on the channels and increasing the main master setting, if the amp has that capability. There are also units available to change the levels that may help, such as the Ebtech Line Level Shifter. Unfortunately, in the guitar amp world (unlike in the pro-audio world), there is little or no cooperation or dialogue between the amplifier manufacturers and the effects gadget/pedal makers. Consequently, you may often encounter level compatibility problems that are difficult to remedy without external gadgets (such as the Ebtech box) to make them work properly.