Noise Engineering
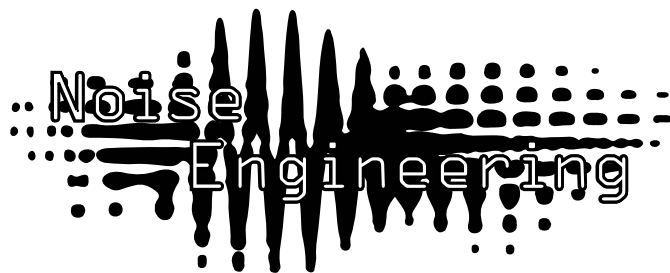# Terci Ruina

Three classic distortions with a
Noise Engineering flair in four HP

Overview

Type	Triple distortion
Size	4HP Eurorack
Depth	.8 Inches
Power	2x5 Eurorack
+12 mA	30 mA
-12 mA	25 mA

Three classic distortion topologies reinterpreted with a Noise Engineering touch and connected in series for complete sonic annihilation of any sound. Patch in and out at any point. Unapologetic noise and destruction.

Etymology

Terci-- from Latin: "Three"
Ruina -- from Latin: "Destruction"

"Triple Destruction"

Patch Tutorial

Patch 1: Patch a sound to the first input. Patch the last output to your mixer. Play with the knobs for some intense distortion.

Try using the ins and outs to change the order of the distortions and see the differences in sonic character.

Patch 2: Sinc Bucina works especially well before TR. Try SB on its more resonant settings and then dial in some distortion from TR. A second SB after that combo adds even more dynamic possibilities.

If a patch becomes to noisy, an easy solution is to put a VCA such as the Sinc Bucina or Sinclastic Empulatrix after TR controlled by your main envelope.

Patch 3: Drums (both acoustic and electric; try the BIA!) sound especially good through TR. Don't forget to try out the individual distortion circuits as well as combinations of all three!

Patch 4: Running a filter (especially a lowpass or bandpass filter) before or after TR always sounds great. Add an envelope (Pons Asinorum is a small, inexpensive option) to the filter for acidic basslines and modulated fun.

Interface

FB: Distortion 1 drive amount. This circuit is uses two bipolar transistors for gain and Si diodes in feedback for clipping.

FF: Distortion 2 drive amount. This circuit is uses an op amp for drive with Si diodes in feedforward for extreme saturation.

FZ: Distortion 3 drive amount. This is a two stage bipolar transistor fuzz.

In x3: The inputs for the three distortions. Can be used separately, but are normaled to the previous distortion's output as shown on the panel. Patching breaks normalization.

Out x3: The outputs for the three distortions. Can be used separately, but are normaled to the next distortion's next as shown on the panel. Patching breaks normalization.

Design Notes

We have been pondering and prototyping distortions for a long time. This module came from a prototype that was built just to investigate 6 different distortion topologies. We were looking for a simple candidate for our first Ruina module and decided that keeping it super simple was the best choice. Three distortions were chosen from the 6 trying to find the distortions that did the most interesting things when combined together.

The first section, FB, is a two-stage asymmetric diode-feedback topology using high-beta bipolar transistors for gain. It ends up being a very nonlinear waveshaper that is sensitive to waveform symmetry. I find a lot of really interesting tones in the middle knob range on this one as the gain ends up controlling where in the waveform the nonlinearities occur.

FF is an asymmetric feed-forward diode clipper using op-amps for gain. This one is a pretty straight-forward diode clip with just enough asymmetry to make it fun. The knob goes from soft clip to heavy overdrive.

FZ is a high-gain bipolar fuzz. The knob blends between differently phased sections which gives the knob a low-pass to high-pass frequency response as it is turned up. The distortion is a bit more subtle on this but the filter allows the user to accentuate it nicely.

TR was not designed to be pretty or clean but was meant to invoke some of the chaos that happens when using guitar pedals. It will be noisy. It may pick up radio stations. There is a little gremlin in there.

Special Thanks

Shawn Jimmerson
Matt Lange
Joey Blush