Decapitator

Analog Saturation Effects

User's Guide

Version 5 : For Mac and Windows

soundtoys

Figure 1: The Decapitator Control Panel

Saturation; it's the essence of what makes analog hardware sound so musical and pleasing to the ears. The sound of tubes, transistors, and circuitry being pushed to their limit has long been the magic mojo behind recordings of the analog-era. Saturation has been used to beef things up, thin them out, give them edge, fry them up nicely, add warmth, smooth over, pull elements out of the mix, and create signature sounds. From the very subtle to the extreme, analog saturation is an integral part of great mixes.

This is the reason why we created Decapitator. This crucial component of recorded sound, essentially the very concept of what we consider musical, can remain largely absent in the world of modern, digital recording. In creating Decapitator we collected and painstakingly analyzed the classic hardware that audio would be driven through in order to create the special character that we equate with 'analog'. Consoles, preamps, input channels, EQ's, compressors, and dedicated studio distortion units were all studied in great detail to analyze just how analog circuity alters sounds that pass through it, especially how those sounds evolve as they begin to saturate the signal path. What we came up with for Decapitator is not a static convolution-style snapshot of saturation, but rather changing, responsive models in the digital realm faithful to their real-world counterparts.

Decapitator is more than just an approximation of analog sound: it has the analog feel and responds to the dynamics of the audio that is passed through it. It is the sound of real gear, with the flexibility and reliability of software. Decapitator's analog styles and modeled tone control allow you to shape and contour different flavors of saturation.

The added mix control lets you balance the dry and wet signals for parallel processing without the need for routing or submixes. Decapitator puts into one plug-in a wide tonal palate of analog saturation effects true to the roomful of physical hardware we used in creating the plug-in.

Of course, saturation doesn't always need to present itself in such a subtle manner. That's why we added in the 'Punish' button which kicks in another chuck of gain to push your sounds into all-out chaos and screaming distortion. Decapitator gives you the unique flavor of driving high end studio gear deep into the red, and each analog style screams out in beautiful agony differently when punished.

Decapitator's dynamic and responsive handling of audio makes it useful in literally every part of your signal chain. Since its initial release, Decapitator has been used in studios worldwide to bring the sound of classic analog, those wonderfully musical distortion characteristics, into the modern digital workflow. And now, Decapitator can work its magic for you.

Figure 2: Decapitator's GUI

STYLE

The Style buttons, located at the bottom of Decapitator's GUI, may seem like an odd place to start the User's Manual. But the five available styles each represent the different saturation algorithms that make Decapitator such a unique and useful tool.

Each one of these styles were created by analyzing their respective hardware counterparts in our lab. Our engineering team tweaked and then geeked over the data pulled from just how these units alter the signals entering and then exiting them. The models we came up with allowed us to very closely match the harmonic structure, frequency response, and dynamic response of analog gear as it is being pushed beyond its normal limits.

Every one of the real-world channels used in the creation of Decapitator reside at the Soundtoys lab in beautiful Burlington, Vermont. We searched high and low for these pieces of gear, analyzed them in detail, admired their beauty, and listened to them even more.

On the next page is a guide to what we modeled in creating each style. *

STYLE (continued)

A:

The first style in Decapitator, "A", was modeled after the Ampex 350 tape drive preamp. The iconic Ampex 350 tape recorder was a studio fixture during the 1950s, found in the studios of Sun, Stax, Motown, and Chess Records. Eventually, these old workhorses were replaced by newer multitrack recorders and dedicated mastering tape machines. While the newer machines certainly increased fidelity and transparency, they lacked the color the earlier 350's imparted on the source material.

Often, the preamp sections were pulled out, rewired, and used as stand-alone mic pres, of which we have several. Designed to handle ribbon mics, the units feature a jaw-droppping amount of gain. The best way to describe the tube-driven distortion of the Ampex 350 is *ultra-ultra-smooth*.

E:

Modeled after the Chandler®/EMI® TG® Channel. Wade Goeke at Chandler Designs has crafted some truly excellent gear based on vintage mixing consoles from the famous EMI/Abbey Road studio in London. Like the EMI consoles, the sound of the TG channel is a beefy low end coupled with a smooth but airy top-end sheen. We just love the sound of this piece of gear, which is an excellent mic preamp, DI and EQ, with loads and loads of character.

N:

Modeled after the Neve® 1057 input channel. This is early Neve, and a very unique character compared to the later, and more ubiquitous 1073. A large factor in their difference is the fact that the 1057 (and the rest of the 105x series) are built around Germanium transistors (think vintage FuzzFace), and have a unique, distinctive, and phenomenal sound, especially on guitars (big surprise there, right?).

The "N" style encompasses a lot of that classic Neve character: a weighty but solid low end with focused but not narrow mids, just begging for the needle to be pegged to hear those Germaniums sing.

T:

Modeled after Thermionic Culture® Culture Vulture® triode setting. The Culture Vulture was the first dedicated studio (meaning "not just for guitar") distortion device, and is an amazingly useful tool for adding warmth and various levels of dirt to drums, vocals, keyboards or just about anything. This setting models the sound of an overdriven 'Triode' tube, commonly used as the preamp tube for guitar amplifiers or tube mic preamps. Triodes typically add loads of even harmonic distortion, and that's certainly true here. The sound is warm and punchy, and is especially useful to add some attitude to drums or other percussive instruments.

STYLE (continued)

P:

Modeled after Thermionic Culture® Culture Vulture® pentode setting. This style models an overdriven Pentode tube, which is commonly used in the output stage of guitar and other amplifiers. It is usually characterized by odd harmonic distortion, and because of that, has a different sound from triode tube designs (which have more even harmonics).

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DRIVE

Since Decapitator was designed to impart the sonic character of analog gear driven hard, any control labeled "Drive" will probably see a lot of use. Why else would we have make the knob so big, right?

The Drive control is key to unleashing the full spectrum of saturation effects from the plug-in. This control operates just like an input control into an analog circuit: the harder the signal is pushed, the more it will saturate. The manner in which your audio will distort is highly dependent on the style assigned. The hardware units modeled all respond differently when driven and this is recreated faithfully in Decapitator.

Drive is a gain control, and as such will increase the level coming out of Decapitator. This can either be manually adjusted for by reducing the Output control or by activating Decapitator's Auto-Gain function.

PUNISH

The Punish button, located between the Drive control and the Attitude Meter, adds an extra 20db of gain to the signal being sent through Decapitator. With Punish engaged things will get loud, things will get brutal, and things will certainly get distorted.

Much like with the Drive control, Punish will increase the audio level coming out of Decapitator.

THE ATTITUDE METER

The Attitude Meter in Decapitator is a highly responsive VU meter useful as a visual indicator of the audio level in relation to the Drive control. The Attitude Meter does not measure output from Decapitator.

The physical design for the Attitude Meter was highly inspired by a vintage Simpson VU meter (as featured in the Ampex 35X series) encased in wonderful bakelite that also resides at the Soundtoys lab.

THUMP

The Thump toggle switch will add a few dB of low frequency boost right at the Low Cut frequency. This is similar to the 'head bump' of analog tape recorders, and is one of the reasons that recording to analog tape can sound so fat.

Keep in mind that switching on Thump will increase the amount of low frequencies that hit the saturation circuit. This can add some flabbiness to the sound, or sound incredible, depending on the setting of the Low Cut and the characteristics of the audio that you are working with.

LOW CUT

Use the Low Cut control to remove low frequencies before they hit the (virtual) saturation circuit. This is useful to prevent any 'flabbiness' that can happen when distorting sounds with a lot of low frequency content.

Turning Low Cut higher will remove progressively more lows (the bass frequencies). At extreme settings you can get some very low-fi telephone and AM radio effects, especially when used together with the High Cut control.

TONE

The Tone control is an easy way to adjust the overall color of your sound, from "Dark", to "Bright". The Tone adjuster is a very gentle sloping equalizer, similar to the old tone control on AM radios or a tilt EQ.

When the Tone knob is moved to the left, or the "Dark" side, the low frequencies will be boosted, and the high frequencies will be attenuated. When the Tone knob is moved to the right, or the "Bright" side, the lows will be decreased, and the highs will be boosted.

Keep in mind that the Tone knob alters the sound before the saturation section, so it will affect which frequencies get distorted, and can have a dramatic effect on the sound.

HIGH CUT

The High Cut control is in place to remove high frequencies from the distorted sound, and as such it operates AFTER the saturation section. This is in contrast to the Low Cut and the Tone controls, which affect the sound pre-saturation.

Depending on the source that you're working with, a certain amount of High Cut may be necessary to tame any 'fizzy' frequencies as a result of the distortion generated in Decapitator. This is a common complaint of some distortion devices and we decided it would be best to give you total control over the amount of 'Fizz' you'd like to leave in, or take out.

The High Cut control is useful in retaining the saturation characteristics of analog recordings without passing along excessive high-end information. Think of it this way: in a typical DAW setup, with Decapitator placed as the last effect in the chain, the audio exiting the plug-in is faithful to the source. However in a typical analog setup there would be additional high end attenuation of the signal either on the path to the recording medium (output transformers/tube section) or the medium itself (tape).

STEEP

The Steep switch alters the slope of the High Cut filter. When it is OFF, the High Cut filter is a very gentle 6 dB per octave rolloff. When it is ON, a super-steep 30 dB per octave filter is switched in.

Even though Decapitator is not a guitar amp emulator, the Steep setting is useful for emulating the sound of a guitar amplifier speaker cabinet. Step Steep to ON and set the HighCut to somewhere in the 4kHz to 5 kHz range (also useful for the direct-to-board sound on guitars).

OUTPUT

The Output knob is used to control the output level. Since the Drive control will increase the audio level emanating from Decapitator, the Output control is useful for when you want complete control over saturation vs. volume. When the "Auto" switch is engaged, the Auto-Gain function takes control of the Output knob and the output level is adjusted automatically.

AUTO

The Auto switch controls the Auto-Gain feature of Decapitator. Auto-Gain will automatically turn down the output as you increase the drive level. Notice that as you adjust the Drive control, the Output control will move in the opposite direction.

MIX

The Mix control determines the balance between the original audio and the audio processed by Decapitator. Utilizing the Mix control allows you to blend the original signal in with the saturated version. This is a great trick to restore the transients of your original sound that get chopped off by the saturation stage. This effect is similar to 'Parallel Compression', a trick used by many top engineers to shape the sounds of drums and other instruments.

SUPPORT INFORMATION

Now that you've taken the time to learn all about Decapitator, have fun, experiment, and make greatness! If our plug-ins helped you take your production to the next level, let us know, we'd love to hear from you and what you were able to create with our software.

If along the way however you should run into any hiccups or anything unexpected, we offer free technical support for all registered users.

Our FAQ contains many helpful answers. you can find it at:

http://support.soundtoys.com

If you need further support you can find our Customer Support contact form at:

https://www.soundtoys.com/forms/support

You can also reach our support staff by e-mail at:

support@soundtoys.com

If neither of those options work for you, our office can be reached via telephone at:

1-800-COOL-EFX

Please have the following information available to help assist our support team:

- The product version and serial number

- The version number of your audio system (e.g ProTools 11.2.1, Cubase 8.0.5, Logic 10.2.0, Cakewalk Sonar X3)

- Your interface/hardware (e.g. Mbox Pro, Apogee Quartet, RME Fireface, etc.)

- Your computer and operating system info (e.g. MacPro OS X 10.9.5, Windows 7 SP1, Windows 8.1, etc.)

- A detailed description of the problem
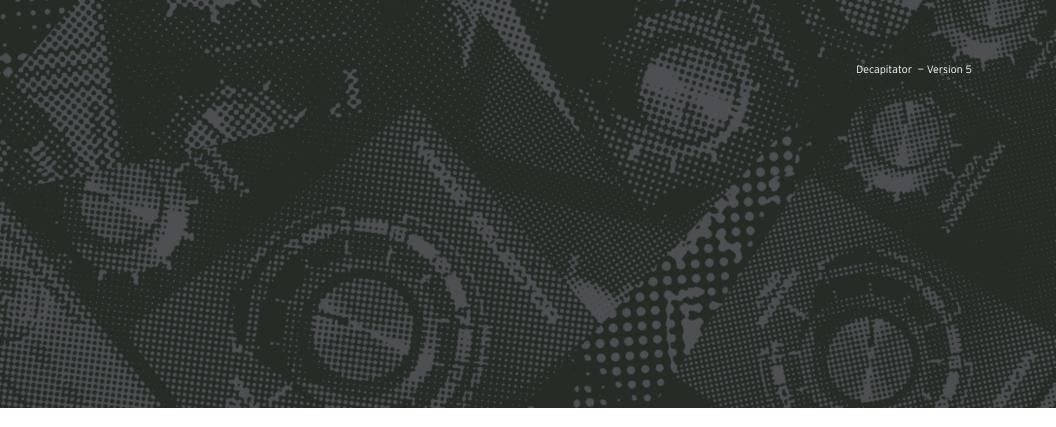
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