



# Yek's Guide to the Fractal Audio Drive Models



Original content: Alexander van Engelen (yek)

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## Guide Revisions

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March 2017	First release
March 2017	Added Shimmer Drive, other additions
June 2017	Minor updates
August 2017	Updates, additions, finetuning, updated presets

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## Disclaimers

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This guide has not been not submitted to Fractal Audio for authorization. The contents are based on published data, web sources, forum posts et cetera, and of course on personal experience.

Yek nor simviz owns the copyright to any of the photos.

There WILL be unintentional errors in this guide. If you find one, please contact yek through the forum: <http://forum.fractalaudio.com>

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## Introduction by simviz

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In February 2016, Yek (Alexander van Engelen) from the Fractal Audio forum began writing **articles describing every amplifier model** in Fractal Audio's amplifier modelers. He also provided presets to demonstrate the models.

Almost exactly a year later he has done it again: he documented every drive model in the Axe-Fx II, FX8 and AX8. This document is made up of those articles with additional summaries and pictures.

Enjoy!

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## Introduction by yek

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After finishing my **Guide to the Fractal Audio Amp Models**, I thought to myself: "never again". But the uncharted territory of the drive models was too tempting and here we have it: the next guide.

Compared to the amplifier models, information about the drive models is pretty scarce. Remarkable, because drive pedals (overdrives, boosts, fuzzes etc.) are the most common devices to be found on traditional pedalboards. Each day sees the arrival of a new drive pedal of some kind, it seems.

I want to thank simviz (again) for assembling the contents of the forum threads into a neatly formatted PDF document. And many thanks to Fractal Audio in the first place for providing state-of-the-art models of iconic pedals.

Like the Amp Guide, this PDF guide is more complete and up-to-date than the preceding forum threads. Still, it's worthwhile to check those threads, because of the comments, personal stories and additional videos.

I'd like to mention two sources of information in particular which helped me writing this guide:

- Analog Man's Guide to Vintage Effects, available at <http://amgtve.formusiciansonly.com>
- **Gitarre und Bass**, the best guitar magazine out there

Don't mind the spelling and grammar mistakes in this guide. English is not my native language.

If you like this guide, please consider donating to a good cause. If you need a suggestion: a specific cause is supported by my girlfriend and me, as described in the **Guide to the Fractal Audio Amp Models**. You can donate here: <http://www.paypal.me/alexandervanengelen>

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## About the Drive Block

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### Overdrive, Distortion and Fuzz

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These pedals/models all add distortion to your tone. The main difference is the type of clipping. Transistors in electronic devices amplify the signal and when they clip, they distort. The type of clipping/distortion determines the type of pedal. *Overdrives* rely on soft gradual clipping, react dynamically and complement the sound of the amplifier. *Fuzz boxes* clip hard and aggressive, which results in a buzzy sound. *Distortion* covers middle ground, leaning towards heavier guitar tones than overdrives.

Pete Thorn's videos about how (not) to use overdrive and distortion pedals:

- [Tone Secrets, part 1](#)
- [Tone Secrets, part 2](#)

### Fuzz and Impedance

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Inherent to the architecture of digital modelers is that they are unable to exactly replicate the interaction between a guitar pickup and many traditional fuzz boxes, which depends on varying low impedance. To improve the emulation of such fuzz boxes, the Axe-Fx II and FX8 allow you to select a specific impedance setting. The AX8 does not have this feature. So when you're creating a fuzz-specific preset on the Axe-Fx II or FX8, experiment with the Input Impedance setting.

*"The Fuzz in the Axe-Fx reacts as though there is a buffer in front of it (because there is). It's a limitation inherent to all modeling products. I modeled it using a nominal source resistance. To really simulate it you would need a controller to simulate the changing output impedance of the guitar"* – Fractal Audio

### Mapping of Knobs

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- When the original pedal has a single Tone knob, it will be mapped to the Tone control in the model. Example: T808.
- When the original pedal has active EQ controls (Bass/Mid/Treble), use the equivalent controls in the model. Example: Esoteric RCB and ACB.
- A Gain or Drive knob on the original will be mapped to Drive in the model.
- A Volume or Level control on the pedal will be mapped to Level in the model.
- Specific knobs and switches on the original pedal are sometimes mapped to controls in the model, but not always.

### Mix Parameter

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Unlike other effect blocks, Mix at 0% in a drive block is not equivalent to 100% dry signal ("true bypass").

*"The models let clean through even with the mix at 100%. It depends on the diodes though as to how much clean is mixed. Our models are based on the most common versions"* – Fractal Audio

A common trick is to set Mix at 95% or somewhat lower to maintain transparency and attack.

The Mix parameter operates prior to any tone control. This lets you mix dry signal with the

distorted signal and still maintain overall tone control.

A drive block allows you to adjust more parameters than the modeled real device provides. Discussion of all parameters is beyond the scope of this guide, refer to the [Owner's Manual](#) or [wiki](#).

## Turning an Amp into a Drive

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Some manufacturers of guitar amplifiers build pedals aimed at reproducing their signature amp tone. Examples: EVH 5150, Friedman BE-OD, Bogner Ecstasy Blue and Red, Bogner Uberschall, Diezel VH4. You can accomplish a similar thing in the Axe-Fx II and AX8 by “changing” an amp model into a drive model. It's a simple procedure: turn off Power Amp Modeling in the amp block by setting SAG to “0” (screen shows "p.a. off") and set Presence to "5" (neutral). This expands our arsenal of drives and requires less CPU usage than a dedicated drive block. This approach is especially handy in the Axe-Fx II with its two amp blocks. AX8 owners can benefit as well, when using the AX8 with a real amp.

## Using a Drive as an Alternative to an Amp

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With some creativity, you can use a drive block instead of an amp block. It won't sound great and it will lack dynamics, but it lets you circumvent the AX8's limit of a single amp block, it avoids the audio gap that occurs when switching an amp block between X/Y, and it provides a way to continue your performance when your real guitar amp stops working.

**Tutorial by Danny Danzi**

## CPU

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The Drive models use varying amounts of CPU. The list below shows the CPU load percentage of each type in “idle” mode (not playing guitar). CPU usage is amplitude dependent which means that it will rise and fluctuate when playing. The Super OD model currently tops the list. Measurements are based on Quantum 7 firmware.

BB Pre	10	Mid Boost	8
Bender Fuzz	8	Octave Dist	8
Bit Crusher	8	Pi Fuzz	8
Blues OD	8	Plus Dist	11
Esoteric ACB	9	Rat Dist	8
Esoteric RCB	9	Ruckus	8
Eternal Love	10	SDD Preamp	8
Face Fuzz	8	Shimmer	11
FAS Boost	10	Shred Dist	8
FAS LED-Drive	10	Super OD	13
Fat Rat	8	T808 Mod	10
FET Boost	8	T808 OD	10
FET Preamp	8	Tape Dist	8
Full OD	10	Timothy	9
Hard Fuzz	8	Treb Boost	8
M-Zone Dist	8	Tube 3-knob Drv	10
Master Fuzz	11	Tube 4-knob Drv	10
Micro Boost	8	Zen Master	10

## Emulating Other Devices

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If a specific device has not been modeled, you can still use the available tools to emulate it. For example, two compressors can be used to emulate a **Schaffer Replica**. A PEQ gets you the EQ curve of a drive pedal, without its distortion. Some players use the FA Boost or T808 OD model to emulate a Maxon overdrive. And so on.

## Popping

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Switching between two drive model types, for example by X/Y switching, may cause an audible “pop”.

## Clean Boosting

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Some of the drive models, or rather the pedal on which the model is based, are clean boosts. The purpose of a clean boost on a traditional pedalboard is evident: increase signal level without adding tonal color. That neutral character is not as important in a digital device. Digital devices such as the Fractal Audio products offer multiple alternative ways to boost signal level without ANY change to the tone. A simple Volume or Filter block (set to Null) does the job, for example.

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## Presets

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### Yek's demo presets

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Yek built simple presets to demonstrate most of the drive models, based on the recommendations in this guide. Visit the wiki for a download link:

[http://wiki.fractalaudio.com/axefx2/index.php?title=Yeks\\_Guide\\_to\\_the\\_Fractal\\_Audio\\_Drive\\_Models](http://wiki.fractalaudio.com/axefx2/index.php?title=Yeks_Guide_to_the_Fractal_Audio_Drive_Models)

The presets were created on an Axe-Fx II XL. Use the **FracTool** utility to import them into an Axe-Fx II Mk I or II or an AX8.

Read the included Read Me file for more information.

### AustinBuddy's 700+ Naked Amps TonePack

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Another fine source is **AustinBuddy's 700+ Naked Amps TonePack**. He created presets for each Amp type, focusing on authentic tone, including a suitable, dialed-in drive block.

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## Drive models

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The next sections cover all drive models and the original devices on which they are based (when applicable). The header of each section is a link to the original forum thread.

For more information about the Drive block parameters, refer to the **Axe-Fx II Owner's Manual** and the **Fractal Audio wiki**.

## BB Pre (based on Xotic BB preamp)



<b>Synopsis</b>	Based on an overdrive pedal with a gain stage that can change a clean amp into a 4x12 stack
<b>Tips</b>	Sounds great at stock settings. Especially handy to use with an AX8 with its single Amp block, in combination with a clean amp model
<b>Clips</b>	<b>Andy Timmons</b> <b>Pro Guitar Shop - Xotic BB Preamp Part 1 - Strat</b> <b>Pro Guitar Shop - Xotic BB Preamp Part 2 - Les Paul</b> <b>J.D. Simo</b> <b>Dave Weiner</b>
<b>Original Controls</b>	Gain (Drive), Volume (Level), Treble (Treble), Bass (Bass)
<b>Clip Type</b>	Silicon
<b>Web</b>	<b>Xotic</b>

Xotic is an American company known for its quality effects, such as the RC Booster, AC Booster, EP Booster and Robotalk, as well as its guitars and basses.

The BB preamp pedal became popular after Andy Timmons made it his main boost pedal. Xotic even built him a signature edition. Xotic released several versions of the BB preamp, with varying amounts of compression, as described on [guitartoneoverload.com](http://guitartoneoverload.com). These days Timmons also has a signature pedal by JHS, used for another purpose than the BB preamp.

"BB" is an abbreviation of "Bluesbreaker", Marshall's vintage 2x12 combo amp, used by Eric Clapton in John Mayall's Bluesbreakers. Read more about it in the [Guide to the Fractal Audio Amp Models](#).

The BB preamp can turn a pristine clean amp into a rock monster, or add smoothness and compression to an already overdriven tone. It adds a preamp gain stage. While the pedal doesn't sound like a Tube Screamer and provides much more gain, it is partly based on that circuit.

*"The BB Preamp offers a wide variety of sounds. It's capable of a 30dB+ clean boost with an adjustable  $\pm 15$ dB two band active EQ which adds a wide range of harmonic content to your ideal sound. The BB also utilizes a pre-gain stage which allows the pedal to go from a very pristine clean to a very smooth, compressed, overdriven sound" – Xotic*

The pedal has four knobs:

- **Gain:** controls the amount of overdrive (model: Drive). Usable across its entire range.
- **Volume:** sets the output level (model: Level). Use a low setting for unity gain.
- **Bass and Treble:** these two active tone controls are handy tools to sculpt the tone when needed, cutting or boosting up to 15 dB. The model also provides active Bass and Treble controls, but the settings do not match with the real pedal visually.



For authentic results, do not use the Tone knob in the model.

If you like the character of the BB Pre model, but prefer a thicker and warmer tone, try the Esoteric ACB model, based on Xotic's AC Booster.

*"While I don't own a BB preamp pedal anymore, the model truly sounds like the real deal. It creates an authentic overdrive when combined with a clean amp model (default settings, turn down Level). It will also boost an overdriven amp (try Drive at 2, Level at 3). IMHO, the BB Pre is a prime candidate to consider when using the AX8 with its single Amp block" – yek*



*"Works just like the real thing here. Tons of gain, too much IMO but I didn't design it"*

## Bender Fuzz (based on Sola Sound/Vox Tone Bender)



<b>Synopsis</b>	Based on the Tone Bender circuit, the first UK-built fuzz pedal, used by Jimmy Page when recording Led Zeppelin's Whole Lotta Love
<b>Tips</b>	Set Drive to taste and combine with a clean-to-slightly-dirty amp. Use the guitar's volume knob to control the amount of fuzz
<b>Clips</b>	<a href="#">Sola Sound Tone Bender Fuzz</a> <a href="#">Jimmy Page in "It Might Get Loud"</a> <a href="#">Which JMI Tone Bender is Right For Me?</a> <a href="#">Sola Sound Professional MKII Tone Bender</a> <a href="#">Ramble FX Twin Bender Fuzz, demo by Pete Thorn</a> <a href="#">Original 1973 Sola Sound Tone Bender fuzz</a>
<b>Original Controls</b>	Attack (Drive), Level (Level)
<b>Clip Type</b>	Hard
<b>Web</b>	<a href="#">Macari's</a>

The classic Tone Bender fuzz originates from the '60s. It was designed and manufactured by Macari's / Sola Sound in the UK. The Tone Bender name was used for their range of fuzzes. Sola Sound and Vox Tone Benders are the same thing because the design was licensed to JMI/Vox. Sola Sound continued to build the Colorsound range of effects, including their famous wah pedal (also modeled by Fractal Audio).

A Tone Bender was used by Jimmy Page when recording Led Zeppelin's Whole Lotta Love, as shown in the documentary "It Might Get Loud". Eric Clapton is another famous user.

According to [Wikipedia](#) the first Tone Bender design was based on the Maestro fuzz and contained three transistors. The second edition, later named "MK1.5", had two transistors and was a negative feedback amplifier; the Arbiter Fuzz Face and Vox/JMI Tone Bender are based on it. The "Professional MKII" edition contained three transistors again; it was a MK1.5 model with an additional gain stage, and probably is the most popular and most-copied design. It was rebadged by Marshall as the Supa Fuzz. The less popular "MKIII" had an additional Tone control and was followed by the "MKIV".

*"The Tone Bender MK1.5 is said to be the first circuit type used in any Sola Sound sand cast enclosure and the only Tone Bender made with two germanium transistors. So sonically what can you expect? The tone is a little heavier and denser when compared to that of the Professional MKII. Has some of that beefy woolliness of a good germanium Fuzz Face but still has enough cut and shove to not completely loose it in the mix. The saturation levels are lower too so works pretty neat for driving a big ballsy amplifier over the edge but never to the extent that things completely fall apart"*

*"Some would say that it all about the place it holds in the world of rock'n'roll. When I demo a MKII in the shop these days I am still blown away by the sound – for me it is the epitome of great guitar tone – loads of headroom, warm fat crunch through to aggressive rock tones suitable for downtuning, then back off your volume and there are all those huge blues tones. That's today... what it must have been like back in 1964 I can only imagine – It must have been like a spaceship landing – most people walking into Macaris back then would have only heard a fuzzbox on record – this pedal played through an old Marshall or Selmer or Vox – well, for a guitarist, it must have been life changing" – Macari's*

Many clones and replicas exist. D\*A\*M Stompboxes in the UK still builds authorized authentic reissues for Macari's:

*"The first commercially made fuzz box to hit the UK market was the golden coloured, wedge shaped; three transistorised Gary Hurst designed Tone Bender. The Tone Bender was released in September 1965 and sold for 14 guineas, approximately £185 in today's worth. The Tone Bender was a big hit and quickly drew big name players to a growing rank of users. The Yardbirds, The Who, The Pretty Things, The Merseybeats, The Ivy League and a rather popular band from Liverpool called the Beatles were among users of the Tone Bender. Guitar player with a Hull based band called the Rats also used this original Tone Bender as his primary fuzz sound for many years. This Guitar player was Mick Ronson who as we know went on to play lead guitar alongside a certain David Bowie. This first incarnation of the Tone Bender was only made for a relativity short time period before the design of the pedal was significantly changed.*

*Following the success of this first Tone Bender, which we will refer to as the MKI, it was clear*

*that the design of the pedal needed to be geared towards being a more readily produced item. Early in 1966 a new improved Tone Bender arrived on the scene, this version of the Tone Bender has become known as the MKI.5. This new design was much more modern & futuristic in appearance and was also more ergonomic in its aesthetics, more space ship like in appearance than the tank like appearance of the MKI. The new improved Tone Bender enclosure was manufactured using a sand casting process and was finished in a silver/grey hammertone paint. The new Tone Bender was, like its predecessor, named only as a 'Tone Bender'. The silk screening on the enclosure only featured the pedals name; the labelling for the controls and the input & output sockets, no company information was featured.*

*The internal construction style of the MKI.5 is of the same style that followed through into the build technique of the MKII's. The MKI.5 utilised isolated jack sockets as to avoid ground loops, a feature used on all Tone Benders and most other quality British made effect pedals from the 1960's. A technique unfortunately that is seldom used today. All the early Tone Benders, right up to the introduction of the MKIII, also relied heavily on the use of shielded cabling throughout. Again, a very good construction technique and yet again little seen in use today. Interesting side note, true bypass switching that is often seen as a modern feature to 'boutique' builders was actually first seen used in the Tone Bender MKI.*

*The earliest MKI.5 Tone Bender I seen featured two IMPEX S3-1T Germanium transistors. Possibly have been prototype unit? Commonly the MKI.5 along with a large percentage of MKII Tone Benders used the British made Mullard OC75's. The two transistor arrangement of this type of circuit is called a voltage feedback biasing circuit. Interestingly, several fuzz boxes that first made their appearance in the year 1966 used this very same set-up. The Arbiter Fuzz Face, the Vox Tone Bender, Vox Distortion Booster and the Sola Sound made Tone Bender MKI.5. Possibly a happy coincidence? but more likely inspired by the popularity of the originator" – D\*A\*M Stompboxes*

More online information:

- [Premier Guitar](#)
- [Tone Bender Timeline](#)

The most popular Tone Bender designs are simple pedals with just two knobs:

- **Level:** controls the output level (model: Level).
- **Attack:** sets the amount of fuzz (model: Drive).

For authentic results stick to these controls in the model.



So far, it's unknown which Tone Bender circuit is emulated in Fractal Audio's model. It doesn't really matter though, the Bender Fuzz model sounds great.

It is a versatile fuzz model, maybe more so than the other fuzz models, because it's less buzzy, especially in the low frequencies. It can be used with a clean amp, where it will sound bright and sharp. Or with a cranked amp with lots of power amp distortion (e.g. Plexi), where it is capable of filling the room and flooring the audience, making modern high-gain amps hide sheepishly in a corner. It can even be used with amps with lots of preamp gain and with bass guitar.

At high Drive settings, notes on the low E-string start to get spitty, creating the illusion of an imminent implosion. Nothing to worry about, that's fuzz. To avoid this: crank Level first, then dial in Drive.

For more information about the interaction between guitar and fuzz, refer to the notes at the beginning of this guide.

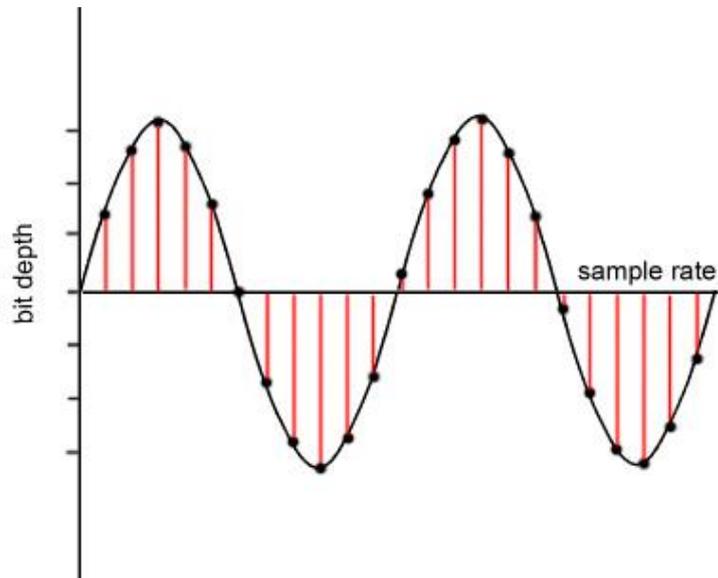
While real Tone Bender pedals contain germanium transistors, Clip Type in Fractal Audio's model is set to "Hard", representing the circuit's hard clipping.



*"The Fuzz in the Axe-Fx reacts as though there is a buffer in front of it (because there is). It's a limitation inherent to all modeling products. I modeled it using a nominal source resistance. To really simulate it you would need a controller to simulate the changing output impedance of the guitar"*

*"The Bender Fuzz handles chords fine, before a clean or slightly dirty amp model, and it works with single coils as well as humbuckers. When combined with a clean amp (model), it's as simple as this: crank Drive and use the guitar's volume knob to control the amount of fuzz" – yek*

## Bit Crusher (custom model)



<b>Synopsis</b>	This Fractal Audio custom model lets you intentionally downgrade audio quality by reducing bit resolution and/or sample rate
<b>Tips</b>	A Looper block makes it easy to experiment
<b>Clips</b>	<p><a href="#">Battle Of The Bitcrushers</a></p> <p><a href="#">Hexe BitCrusher III</a></p> <p><a href="#">Red Panda Bitmap</a></p> <p><a href="#">The Best Crazy Weird Noise Guitar Effects Pedals</a></p>
<b>Original Controls</b>	n/a
<b>Clip Type</b>	Silicon
<b>Web</b>	n/a

Bit crushing is the process of intentionally downgrading audio quality, to create a warm sound or as an effect by itself. A bit-crushing pedal or plugin often provides bit reduction and sample rate controls, and more.

Fractal Audio's Bit Crusher model is not modeled after a specific pedal, although such pedals do exist. If you don't use the model's bit reduction and sample controls, a generic drive remains.

*"Based on a black box we found lying in the trash outside Studio Harshclip" – Axe-Fx II Owner's Manual*

The model at default settings showcases the Bit Reduce control. In fact, this control appears in *all* Drive types, so it's not limited to this specific Drive model. It lets you intentionally create digital artefacts by reducing the resolution of the digital signal. Its value is the number of bits that will be subtracted from 24-bit full scale. For example, to create 4-bit audio, set it to "20" (default value in this model). High values will introduce background hiss and may cause the signal to drop out.

*“Samples in digital audio are recorded as integers or floating-point (real) numbers stored in computer memory. Those numbers are encoded using a series of on and off memory bits. The larger the number of bits, the more accurately a sample encodes the instantaneous volume level of a sampled audio waveform. DAWs today typically use 32-bit floating-point numbers. Early digital audio gear and video games used 8-bit integer samples or less. Roland's classic TR-909 drum machine used 6-bit integer samples. Resolution reduction intentionally reduces the number of bits used for audio samples. As the bit depth goes down, waveforms become more stair-stepped and subtle volume variations are lost. At extreme bit reduction, waveforms are reduced to clicks as a waveform jumps abruptly from low to high and back again without intervening values” – Wikipedia*

Another way to intentionally downgrade the signal quality is to use the Sample Rate control. This introduces digital aliasing by reducing the sample rate from 48kHz all the way to 48Hz. This control also appears in every Drive block.

*“Digital audio is composed of a rapid series of numeric samples that encode the changing volume of an audio waveform. To accurately represent a smooth waveform, digital audio requires many samples at a high sample rate. The higher the rate, the more accurate the waveform. Higher sample rates also allow higher frequencies to be accurately encoded. DAWs today typically use 44.1 kHz or higher sample rates. Early digital gear used much lower sample rates to conserve memory for stored audio. Sample rate reduction (also called down-sampling) intentionally reduces the sample rate to degrade the quality of the audio. As the sample rate is reduced, waveforms become more coarse and high frequencies are lost. At extreme reductions, the waveform becomes metallic sounding” – Wikipedia*

More online information:

- [YouTube – about bit depth and sample rate](#)
- [Article on Xiph.org about the use of bit depth and sample rate in audio playback](#)

Tips:

- Use the Looper (before or after the Drive block) when experimenting with the Bit Reduce and Sample Rate parameters. Record a clip, set it to playback, then start adjusting controls.
- Attach the Sequencer internal controller to a parameter in the Synth block and run it through the Bit Crusher model.
- Attach an expression pedal to Sample Rate, tweak Min and Max, and: instant Dubstep!

If you like “lo-fi” sounds, here are some alternative approaches:

- Lower the sliders in a GEQ block.
- Use the IR of a tiny speaker cabinet.
- Crank the Speaker Drive parameter in the Amp block.
- Use the Ring Modulator block in Non-Tracking mode.
- Use ample low-pass and high-pass filtering.
- Generate pink or white noise with the Synth block.

## Blues OD (based on Marshall Bluesbreaker)



<b>Synopsis</b>	Based on Marshall's Bluesbreaker pedal, a light-to-moderate overdrive aimed at reproducing the sound of a cranked Marshall JTM 45
<b>Tips</b>	Default settings may sound thin and shrill, so tweak the model for best results, in particular by zero-ing the Tone control
<b>Clips</b>	<b><a href="#">The Tone Shack: Marshall Bluesbreaker Mk1 Overdrive Pedal</a></b> <b><a href="#">Marshall Bluesbreaker Pedal Mark 1</a></b> <b><a href="#">John Mayer Rig Rundown</a></b>
<b>Original Controls</b>	Gain (Drive), Tone (Tone), Volume (Level)
<b>Clip Type</b>	Soft
<b>Web</b>	

In the '60s Eric Clapton played through a very loud Marshall JTM 45 combo when recording John Mayall's famous "Beano" album. This amp became known as the Bluesbreaker. Read more about it in the [Guide to the Fractal Audio Amp Models](#).

In the '90s Marshall released the Bluesbreaker pedal, designed to reproduce the valve sound of a cranked JTM-45 with its power amp distortion. It's a light-to-moderate overdrive, like a Tube Screamer but without that pedal's mid-hump. John Mayer ran this pedal into a Klon. The second edition of the pedal (BB-2), which added a Boost/Blues switch, received less appreciation. Analog Man and Robert Keeley designed their own pedals, based on the Bluesbreaker pedal.

#### Article in Gitarre und Bass (German)

The pedal has three knobs:

- **Gain:** controls the amount of overdrive (model: Drive).
- **Tone:** sets tone (model: Tone).
- **Volume:** sets the output level (model: Level).

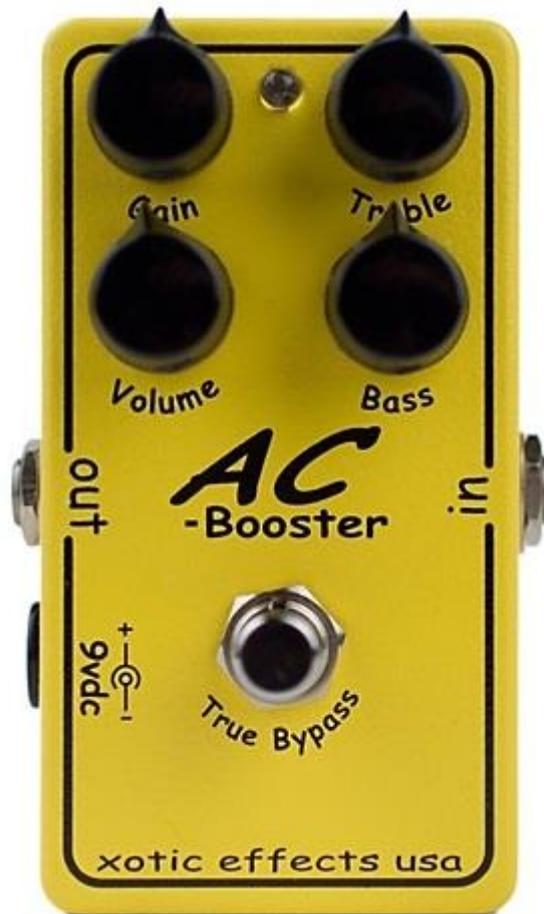


Fractal Audio provides a model of the pedal: Blues OD. So this is NOT a model of the BOSS Blues Driver pedal, as often is assumed. Fractal Audio's BB Pre model, modeled after Xotic's BB preamp, also refers to Marshall's Bluesbreaker amp, but with a totally different take.

At default settings the pedal doesn't sound pleasing: it's thin and shrill. Look past it and you'll be rewarded. The model is perfectly capable of putting out cutting blues (and rock) tones with simple adjustments. Be aware that its sound varies with the type of amp model it runs into: clean, on-the-verge-of-breakup, Fender, Marshall, etc. Turn up Level and keep Drive low, or vice versa, try turning down Tone all the way, et cetera. John Mayer sets all controls on the pedal set to 3 o'clock. In other words: experiment!

*"This model was a surprise. When auditioning drive models in the past, I always dismissed it, because it sounds weak and harsh at default settings. Now, knowing more about its origin and purpose, I can tweak it and appreciate its sound. Try Drive around 6.50, Tone at 0 and Level at 3" – yek*

## Esoteric ACB (based on Xotic AC Booster)



<b>Synopsis</b>	Based on Xotic's AC Booster overdrive pedal, warmer and thicker than Xotic's BB preamp pedal
<b>Tips</b>	Use a low Drive setting to make an already overdriven amp sound much fatter
<b>Clips</b>	<a href="#">Xotic Effects AC Booster</a> <a href="#">Pro Guitar Shop - Xotic AC Booster Strat</a> <a href="#">Pro Guitar Shop - Xotic AC Booster Les Paul</a> <a href="#">Tubescreamer TS-9 vs Xotic AC Booster</a> <a href="#">J.D. Simo</a> <a href="#">Xotic Effects AC Booster</a>
<b>Original Controls</b>	Gain (Drive), Volume (Level), Treble (Treble), Bass (Bass)
<b>Clip Type</b>	Silicon
<b>Web</b>	<a href="#">Xotic</a>

Xotic is an American company known for its quality effects, such as the RC Booster, EP Booster, BB preamp and Robotalk, as well as its guitars and basses.

The AC Booster (“Almost Clean”) pedal is an overdrive pedals which is often compared to an Ibanez Tube Screamer. It produces a sweet overdrive with an uncompressed tube feel, much warmer and thicker than Xotic’s BB preamp (Fractal Audio’s BB Pre model).

*“The Xotic AC Booster Overdrive Guitar Effects Pedal creates a warm and pleasant sound by using the finest quality parts available. The AC Booster is a natural sounding "overdrive" pedal. Not "heavy" distortion, but a sweet thick overdrive with an "open" non-compressed feel. It's capable of a 20dB+ boost with an adjustable  $\pm 15$ dB two band active EQ, which adds a wide range of harmonic content to your ideal sound. The super wide range gain control allows for enough gain for it to work as a distortion pedal when turned all the way up. Equipped with not only boost Gain but also Treble and Bass controls that allow you to adjust your sound anyway you like” – Xotic*

The pedal has four knobs:

- **Gain:** controls the amount of overdrive (model: Drive).
- **Volume:** sets the output level (model: Level). Use a low setting for unity gain.
- **Bass and Treble:** these two active tone controls on the real pedal are handy tools to sculpt the tone, cutting or boosting up to 15 dB. The model also provides active Bass and Treble controls, but the settings do not match with the real pedal visually.



For authentic results, do not use the Tone knob in the model.

*“The AC Booster makes everything more fat. It’s a great tool to smoothen lead tones or chords when placed before an already overdriven amp or to push a clean Fender. Try Drive at 1.75 and Level around 3 into a Friedman amp model” – yek*

## Esoteric RCB (based on Xotic RC Booster)



<b>Synopsis</b>	Based on Xotic's RC Booster, a popular clean boost
<b>Tips</b>	Enhance your overall tone or use it as an easy tool to compensate for differences between pickups
<b>Clips</b>	<b>Michael Thompson</b> <a href="#">Pro Guitar Shop - Xotic RC Booster</a> <a href="#">Xotic Effects RC Booster</a> <b>Scott Henderson</b> <a href="#">RCB-SH Demo</a>
<b>Original Controls</b>	Gain (Drive), Volume (Level), Treble (Treble), Bass (Bass)
<b>Clip Type</b>	Silicon
<b>Web</b>	<a href="#">Xotic</a>

Xotic is an American company known for its quality effects, such as the AC Booster, EP Booster, BB preamp and Robotalk, as well as its guitars and basses.

The RC Booster (“Really Clean”) pedal is a very popular clean boost pedal. Known for its transparency, it enhances the guitar and amp. There's truth to the company's claim that many owners, including pros, leave the pedal turned on all the time.

Scott Henderson is the pedal's main endorser and has been honored with signature editions ([here's a review in German](#)), which led to the development of the RC Booster v2. Fractal's Audio's model is based on the original design.

*“The best characteristic of this pedal of this booster is to have no character at all”*

*“The RC Booster offers a super transparent 20db+ clean boost and a +- 15db 2 band active EQ without ever compromising the integrity of the original TONE. It provides a solution to sound degradation, caused by long instrument cables and/or long effect chains between guitar and amp, by strengthening the original signal” – Xotic*

*“I particularly LOVE the RC Boost for single coils - Strats and Teles or P-90s or lipstick tube pickups. I usually just leave an RC Boost or Fractal drive block "on" when using them. Not a lot of drive when using Fractal version, less than 2 sometimes to emulate the clean boost of an RC, and volume around 4.5 to 5.5. One of the secrets of the amazing Doyle Bramhall II is he usually puts an RC boost pedal next to last in his signal chain, right before the wah (which is last!), and shaves just a hair off the top and bottom end using the tone controls, and then has drive and level at about 11 to 11:30 as well...also works good. When used right, the RC Boost makes your Strat or Tele or Lipstick tube pickups sound like single coil pickups but louder, approaching humbucker signal level (P90s usually have some stronger output and may not need as much help)” – Austinbuddy, forum member*

The pedal has four knobs:

- **Gain:** controls overdrive (model: Drive).
- **Volume:** sets the output level (model: Level). Use a low setting for unity gain.
- **Bass and Treble:** these two active tone controls on the real pedal are handy tools to sculpt the tone, cutting or boosting up to 15 dB. The model's Drive block also provides active Bass and Treble controls, but the settings do not match with the real pedal visually.



For authentic results, do not use the Tone knob in the model.

You can argue about the need for a drive block that acts as a clean boost in a digital environment, because there are less CPU-hungry solutions to boost level.

*“I owned an RC Booster back in my pedalboard days. It's a great tool to have on any traditional pedalboard and add “something” to clean tones or to push a dirty amp. I keep Drive between 9 and 12 o'clock, because I don't care for its gain” – yek*

## Eternal Love (based on Lovepedal Eternity)



<b>Synopsis</b>	Based on the Lovepedal Eternity, a drive pedal that covers overdrive, transparent boosting and treble boosting
<b>Tips</b>	For glassy single notes, keep Drive low and everything else default, in front of a Double Verb amp model, with a Telecaster or Strat. For flat-out rock through a crunchy amp, set Drive to 3, Tone to 1.50 and Level to 6
<b>Clips</b>	<a href="#">Lovepedal Eternity Burst – E6 – Roadhouse - Kanji</a> <a href="#">Pro Guitar Shop - Lovepedal Kanji Eternity</a> <a href="#">Lovepedal Eternity (clean boost mode)</a> <a href="#">Lovepedal Kanji Eternity</a> <a href="#">John F. Klaver</a>
<b>Original Controls</b>	Drive (Drive), Level (Level), Glass (Tone)
<b>Clip Type</b>	Silicon
<b>Web</b>	<a href="#">Lovepedal</a>

Each day sees the arrival of a new overdrive pedal of some kind, boutique or mass-produced. Many times it's just another variation on the same old Tube Screamer circuit. Yet, some stand out and are able to obtain a permanent position in this crowded market. Lov pedal's Eternity is such a pedal. Its high price notwithstanding, it has found its way onto many pedalboards.

*"The Lov pedal Eternity delivers fantastic, tubey overdrive at every setting. You just can't make this pedal sound bad. The extremely interactive controls offer you three knob options for sculpting overdrive sounds; Drive, Level (clean boost), and Glass which functions as a treble booster. Through variation of the Drive and Level knobs you can alter the mix of pedal distortion sound and your amp's natural overdrive characteristics, giving you a myriad of tone options. Through manipulation of the Glass knob you can dial in some sweet Brian May style tones, or roll it off for some dark, warm goodness. The Love Pedal Eternity has developed a huge following and is currently played by Andy Summers of The Police and Richard Fortus of Guns N' Roses, among others"*

*"The Lov pedal Eternity can be 3 pedals in one – Overdrive, Treble Booster and Clean booster – depending on where you set the dials. You can also blend these 3 factors. Darker tones brighter tones, etc. Unorthodox tone control. It's a treble boost instead of a normal tone control. It is a very smooth type of OD. It can go from nothing at all to sounding like a very warm vintage overdriven tube amp or a clean flat booster or a treble booster even a tweed amp. With the treble boost all the way off, it is warmer than most tube amps. The Eternity Overdrive always stays true to what's coming out of your guitar so you never turn into the pedal. No matter how hard you drive it. It also breaks up the harder you dig into the strings, which is priceless" – Lov pedal*

Lov pedal designed multiple versions of the pedal and the differences aren't always clear. It's unknown which version has been modeled by Fractal Audio.

The Eternity pedal has three knobs:

- **Level:** sets the output level (model: Level).
- **Drive:** controls the amount of gain (model: Drive).
- **Glass:** controls the amount of presence. It's a tone control with a large range (model: Tone).

**In this video** Richard Fortus of Guns N' Roses sets the knobs like this: Level 3 o'clock, Glass 9 o'clock, Drive 12 o'clock.



Compared to models like the T808 OD and Esoteric ACB, the Eternal Love model has a similar character with noticeable less bass and low mids. It doesn't emphasize the mids in the same way as a Tube Screamer. Which makes it more transparent, less grainy and an excellent choice to put before a clean amp model for "broken clean" rhythm strumming, while still adding enough body for single note runs. The model is also capable of changing an overdriven amp into a hard rock monster.

The Tone knob in the model has a large range which makes this model very versatile, setting it apart from other Tube Screamer-ish models. With Tone set high, it even is a viable alternative to Fractal Audio's Treb Boost model.

*“For beautiful glassy single notes: keep Drive really low, everything else at default, in front of a Double Verb model (Twin) with a Telecaster or Strat. This is a tone I could fall in love with.*

*When turning up Drive, I roll down the Tone knob. Try this for flat-out rock: Drive at 3, Tone at 1.50 and Level at 6” – yek*



## Face Fuzz (based on Dallas-Arbiter Fuzz Face)



<b>Synopsis</b>	Based on the Dallas Arbiter Fuzz Face, used by Jimi Hendrix, Eric Johnson and so many others
<b>Tips</b>	Put before a cranked non-master volume amp model (e.g. Plexi), crank both controls and use the guitar's volume knob to get the desired amount of fuzz
<b>Clips</b>	<b>Dunlop JDF2 Dallas - Arbiter Fuzz Face Pedal</b> <b>Dunlop Fuzz Face Shoot Out w/ Jeorge Tripps &amp; James Santiago</b> <b>Dunlop fuzzface shootout</b> <b>Pro Guitar Shop - Dunlop Jimi Hendrix Fuzz Face</b> <b>James Santiago - Hendrix Fuzz Face Tips and Tricks</b>
<b>Original Controls</b>	Volume (Level), Fuzz (Drive)
<b>Clip Type</b>	Germanium (default) or silicon
<b>Web</b>	<b>Dunlop</b>

Dallas-Arbiter's Fuzz Face (1966, UK) is based on the Tone Bender MK1.5 model with two transistors. With its smiley face shape, it's perhaps the most famous of all fuzz boxes because of one owner: Jimi Hendrix. Hendrix used germanium-based designs at first, and switched to silicon later. Other famous users include David Gilmour, SRV, Pete Townsend and Eric Johnson.

*"Arbiter Electronics Ltd. first issued the Fuzz Face in 1966. Later units bear the "Dallas Arbiter", "Dallas Music Industries Ltd.", "CBS/Arbiter Ltd." or "Dunlop Manufacturing Inc." name. The earliest units used germanium transistors. Silicon transistors were used in later editions of the pedal. Silicon transistors provided for a more stable operation, but have a different, harsher sound. The electronics are contained in a circular-shaped metal housing. Ivor Arbiter "got the idea for the round shape when he one day saw a microphone stand with a cast iron base". The pedal uses two knobs, one for volume, and one for the amount of "fuzz" the pedal produces. The arrangement of controls and logo on the box suggests a smiling face. The circuit is based on the shunt-series-feedback amplifier topology - a standard in engineering text books. Sola Sound and Vox had been using the same circuit topology for some of their Tone Bender pedals earlier in 1966. Dallas Music Industries made a final run of Fuzz Faces in 1976 or 1977, shortly after they had moved to the United States. The company bought Crest Audio in the 1980s and although it was operating under that name when it reissued the Fuzz Face in the 1986, the units bore the Dallas-Arbiter name. They made about 2000 Fuzz Faces until 1990. In 1993 Dunlop Manufacturing took over production, making a variety of Fuzz Faces to this day. Several germanium and silicon models are available" –*  
**Wikipedia**

The Fuzz Face was the first pedal to have a true bypass switch.

Dunlop owns to the right to the **Fuzz Face name** and produces **multiple versions, including signature editions**.

More information:

- **Vintage Gear: Arbiter Fuzz Face**
- **Tone Report: the history of the Fuzz Face**
- **Gitarre und Bass**
- **ElectroSmash Fuzz Face Analysis**

The Fuzz Face is a very simple pedal with two knobs:

- **Volume:** controls the output level (model: Level).
- **Fuzz:** sets the amount of fuzz (model: Drive).

There's no Tone knob on the pedal.



Fractal Audio's Face Fuzz model is based on a germanium-based Fuzz Face. You can easily switch to silicon without needing surgery by adjusting the Clip Type parameter in the model.

**Article in Guitar Player about germanium transistors**

Compared to the Bender Fuzz model, the Face Fuzz model has more prominent bass and more gain. With Fuzz maxed out, the pedal starts to sound like a ring modulator.

Many players put the Fuzz Face pedal before a cranked non-master volume amp (e.g. Plexi), because the power amp's distortion will soften the hard and harsh clipping of the fuzz. They crank the Fuzz and Volume knobs and then use the guitar's volume knob to get the desired amount of fuzz. Clean sounds are also achievable, especially with the germanium-based Fuzz Face.

For more information about the interaction between guitar and fuzz, refer to the notes at the beginning of this guide.



*"The Fuzz in the Axe-Fx reacts as though there is a buffer in front of it (because there is). It's a limitation inherent to all modeling products. I modeled it using a nominal source resistance. I forget what I used for the source resistance but it was probably around 100K ohms. To really simulate it you would need a controller to simulate the changing output impedance of the guitar"*



## FAS Boost (custom model)



<b>Synopsis</b>	Fractal Audio's custom design of an ideal boost pedal
<b>Tips</b>	Its default amount of gain is very high. If you use this model to boost the input of an amp, you may want to turn down Drive and Level a lot
<b>Clips</b>	
<b>Original Controls</b>	n/a
<b>Clip Type</b>	Silicon
<b>Web</b>	n/a

Fractal Audio provides a couple of custom Drive models. These virtual drives have no real-life equivalents. They solely exist within the Axe-Fx II, FX8 and AX8, implementing Fractal Audio's ideas and improvements on existing pedals.

The FAS Boost model does a fine job as a boost. It has a pleasing neutral type of gain without a mid-hump, full-bodied and smooth.

At default, its amount of gain is pretty high. If you use this model to boost the input of an amp without too much saturation, you may want to turn down the Drive control pretty much all the way.



*"It's not based on anything. It's my take on an ideal boost pedal"*

This model also lends itself well as a building platform for emulating other pedals. For example, forum members have used it to emulate a Maxon OD.



## FAS LED-Drive (custom model)



<b>Synopsis</b>	This Fractal Audio custom model showcases LED clipping modeling
<b>Tips</b>	
<b>Clips</b>	
<b>Original Controls</b>	n/a
<b>Clip Type</b>	LED
<b>Web</b>	n/a

Fractal Audio provides a couple of custom Drive models. These virtual drives have no real-life equivalents. They solely exist within the Axe-Fx II, FX8 and AX8, implementing Fractal Audio's ideas and improvements on existing pedals.

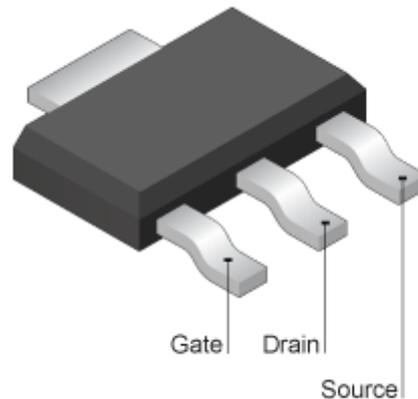
The LED-Drive model is a custom model. It showcases the modeling of LED (**Light Emitting Diode**) clipping. Yes, those little lights can be used for intentional signal clipping (distortion). LEDs do not clip early and therefore have a lot of headroom and they are louder than other diodes. This can be observed by comparing the "LED" Clip Type to other types.

LED clipping is not often used in pedals. Reportedly it's used in MI-Audio's Crunchbox, Pro Co's Turbo Rat, Landgraaf's L'DO and modifications of the BOSS DS-1, as well as in some guitar amps such as Marshall's Jubilee (**Brit Silver model**).

**This Tone Report article** discusses electrical components in pedals such as resistors, capacitors, transistors, diodes, ICs / op-amps.



## FET Boost (custom model)



<b>Synopsis</b>	Fractal Audio custom model: gentle, smooth clipping boost
<b>Tips</b>	The FET Boost model is often used to boost the input of an amp model such as a Plexi. It also serves as a Klon substitute
<b>Clips</b>	
<b>Original Controls</b>	n/a
<b>Clip Type</b>	FET
<b>Web</b>	n/a

FET is the abbreviation of “Field-Effect-Transistor”, a semi-conductor. FETs are used in pedals and amplifiers. For example, Dumble amplifiers (and its clones) provide a FET input for low-gain instruments. In guitar-oriented products MOSFET and JFET types are common.

*“The field-effect transistor (FET) is a transistor that uses an electric field to control the shape and hence the electrical conductivity of a channel of one type of charge carrier in a semiconductor material. FETs are also known as unipolar transistors since they involve single-carrier-type operation. The FET has several forms, but all have high input impedance. While the conductivity of a non-FET is regulated by the input current (the emitter to base current) and so has a low input impedance, a FET’s conductivity is regulated by a voltage applied to a terminal (the gate) which is insulated from the device. The applied gate voltage imposes an electric field into the device, which in turn attracts or repels charge carriers to or from the region between a source terminal and a drain terminal. The density of charge carriers in turn influences the conductivity between the source and drain. (...) The most commonly used FET is the MOSFET” – Wikipedia*

*“FET’s can behave like Tubes in a properly designed circuit. They can “clip” (distort) in a pleasing way instead of being buzzy or spiky sounding (like a Transistor) and can also add a subtle Limiting to the signal which can even-out the volume making your Live and Recorded tones more pleasing to the ear” – Fulltone*

FET is available as a Clip Type in Fractal Audio's drive models, as demonstrated in the FET Boost model. Note that FET Boost and FET Preamp are different models.

The FET Boost model is not based on a real pedal, it's a custom model. Fractal Audio's custom models have no real-life equivalents. They solely exist within the Axe-Fx II, FX8 and AX8, implementing Fractal Audio's ideas and improvements on existing pedals.

The FET Boost model has been in the firmware since the early days. It's a favorite model of many players, boosting the signal going into the amp. Slamming the input of amps often results in better tone than using an overdrive. The increased amp distortion is natural and the tone gets fatter, enhancing the characteristics of the amp instead of changing them.

Why do people love this particular model? Well, how do you describe sound, why does person A like a certain tone, and person B doesn't? The FET Boost is fairly neutral but still adds "something" to the tone. Note that you won't get much distortion from this model on its own, that's not its purpose or forte.

*"A gentle, smooth clipping booster with tone controls" – Axe-Fx II owner's manual*



The FET Boost is also used by some to emulate the KLON. Yes, the illustrious KLON Centaur boost/overdrive pedal, selling for close to thousands of dollars.

Forum member **AustinBuddy** suggests these "clean Klon" settings on the forum: Clip Type Germanium – Drive 4.7 – Tone 4.7 – Level 6 to 8 – Mid: 0.9.

IR Capturing or Tone Matching provides another way to recreate the tone of a Klon, as demonstrated in [this forum thread](#).

## FET Preamp (possibly based on BOSS FA-1 FET Amplifier)



<b>Synopsis</b>	Possibly based on the BOSS FA-1 FET Amplifier, a pocket-size preamp that became famous when adopted by The Edge
<b>Tips</b>	Works best with a dirty amp. Can also function as a substitute for a clean amp in case of an emergency
<b>Clips</b>	<b>Boss fa1 Fet Amplifier</b> <b>Pro Guitar Shop - Retro Sonic Boost FA-1</b>
<b>Original Controls</b>	Volume (Level), Bass (Bass) and Treble (Treble), Flat/Low Cut switch (Low Cut)
<b>Clip Type</b>	FET
<b>Web</b>	

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The FET Preamp model was added in firmware 17. At that time, it became known that guitar player The Edge (U2) had started Fractal Audio gear. The Edge is known for being a hard-core user of the BOSS FA-1. It's pretty safe to assume that there's a correlation between The Edge's use of Fractal Audio gear and the addition of this model.

The rare BOSS FA-1 FET Amplifier from the short-lived Pocket Series is a pocket-size amp, designed to be attached to the player's belt. It's not a pedal and doesn't have an On/Off switch. FET is an abbreviation of "Field-Effect-Transistor", a semi-conductor. For more information, read the FET Boost write-up. It's hard to find an original FA-1 nowadays. If you do find one, it will be expensive. But there are lots of clones, or **you can build your own**.

The FA-1 is primarily used as a boost. Slamming the input of an amp to kick it into overdrive often results in better tone than using an overdrive pedal. The increased amp distortion is natural and transparent and the tone gets fatter, enhancing the characteristics of the amp instead of changing them. The FET Preamp model can be used as such. It works best with dirty amp tones. Alternative boosting solutions are discussed elsewhere in this guide.

More online information:

- **[BOSS FA-1 manual](#)**
- **[Review of boosts in Tone Report](#)**

The FA-1 has these controls:

- **Volume:** controls the output volume (model: Level).
- **Bass and Treble:** active tone controls. The model also provides active Bass and Treble controls.
- **Flat / Low Cut switch:** a 6dB low cut at 200 Hz, designed to prevent feedback ("howling") when using the FA-1 with acoustic instruments. Similar behavior can be achieved in the model using the Low Cut control.

The FET Preamp model is not entirely neutral or clean. It adds grit and warmth to the tone. It provides more gain than the FET Boost model.

*"Can't deny it: the FET Preamp adds recognizable Edge-ness to the tone. Placed before a Fender or Vox amp model, it creates a juicy "broken clean" tone" – yek*

The FET Preamp model is the only drive model that can be used as an emergency substitute for a clean amp. Say, your guitar amplifier stops working in the middle of a performance. Select the FET Preamp, turn up Treble and Bass, add another drive before it (i.e. BB Pre, Ruckus). It won't sound great and dynamics will be absent, but it will let you continue the performance.

## Full OD (based on Fulltone Full-Drive 2)



<b>Synopsis</b>	Based on the Fulltone Full-Drive 2, an overdrive used by John Mayer and Robin Trower
<b>Tips</b>	The model puts out thick, dark tones. Don't hesitate to crank Tone
<b>Clips</b>	<p><b>Full Drive 2</b></p> <p><b>Fulltone Fulldrive 3 vs Fulldrive 2</b></p> <p><b>Sound Like John Mayer - By Busting The Bank</b></p> <p><b>Robin Trower</b></p>
<b>Original Controls</b>	Volume (Level), Tone (Tone), Overdrive (Gain), Boost on some models
<b>Clip Type</b>	Silicon
<b>Web</b>	<b>Fulltone</b>

Mike Fuller was one of the first designers of boutique pedals. He's the inventor of the 3PDT switch, allowing manufacturers to build true bypass pedals with a LED.

His Full-Drive overdrive pedal, especially the Full-Drive 2 (FD2), marked the rise of his fame around '93. The pedal is used by John Mayer, Robin Trower and many others. It's based on the Tube Screamer circuit.

There are many variations of the Full-Drive. The early orange version in particular is very collectable.

**Review in Legendary Tones**

Like the Tube Screamer the Full-Drive can be used as a standalone overdrive, or as a boost into an overdriven amp.

The pedal has these controls:

- **Volume:** controls the output volume (model: Level).
- **Tone:** controls the amount of presence (model: Tone).
- **Overdrive:** controls the amount of overdrive (model: Drive).
- **Boost:** not modeled.

Some versions of the pedal offer additional controls, such as a Comp/Cut push-pull pot.



*"The Full OD model is based on a Fulltone Fulldrive 2"*

It has not been disclosed on which version of the Full-Drive 2 the model is based.

Compared to the T808 OD model, the Full OD model is much thicker and very dark. Don't hesitate to crank the Tone control to add presence to the tone.

*"I set Tone at 9.50 and use a high Drive setting (7.50) with clean amps and a very low Drive value with overdriven amps" – yek*

## Hard Fuzz (custom model)



<b>Synopsis</b>	This custom model provides a hard-clipping, 60's style fuzz
<b>Tips</b>	Use with a clean amp model
<b>Clips</b>	
<b>Original Controls</b>	n/a
<b>Clip Type</b>	Hard
<b>Web</b>	n/a

This model is described in the Axe-Fx II Owner's Manual as *"a hard-clipping, 60s-style fuzz"*.

It's a custom model, not based on a real pedal. Fractal Audio's custom models have no real-life equivalents. They solely exist within the Axe-Fx II, FX8 and AX8, implementing Fractal Audio's ideas and improvements on existing pedals.

It's certainly different from the other available fuzz models. It's very buzzy and seems to work best with a clean or slightly dirty amp model. When Drive is turned up high, the bass gets totally out of control. As always with fuzzes, use the guitar's volume knob to control the amount of fuzz.

This model has the advantage of a low CPU footprint.



## Master Fuzz (based on Maestro Fuzz-Tone FZ-1A)



<b>Synopsis</b>	Based on the Maestro Fuzztone, the first commercially available germanium-based fuzz effect pedal, which was used by Keith Richards on "Satisfaction"
<b>Tips</b>	
<b>Clips</b>	<a href="#">The Rolling Stones - (I Can't Get No) Satisfaction</a> <a href="#">Maestro Fuzz-Tone FZ-1 Demonstration Record 1962</a> <a href="#">1960s Maestro Fuzz-Tone FZ1-A Demo</a> <a href="#">Maestro FZ-1A Fuzz Tone</a> <a href="#">Gibson Maestro Fuzz Tone Demo FZ-1 A</a>
<b>Original Controls</b>	Volume (Level), Attack (Drive)
<b>Clip Type</b>	Germanium
<b>Web</b>	

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The '62 Maestro Fuzz-Tone by Gibson was the first fuzz pedal. The idea for the pedal was born when musicians looked for a way to **reproduce the sound of a broken console transformer**. It became famous when Keith Richards used it in Satisfaction. The Fuzz-Tone led to the development of the Tone Bender and other fuzzes. Pete Townsend's own Fuzz-Tone sold for an astonishing \$12,000.

Back then, the purpose of a fuzz box included emulating instruments like violin, trumpet, cello and organ. Some compare the sound of the riff in "(Can't Get No) Satisfaction" to that of a trombone.

The Maestro brand became part of Moog in the 70s.

*"The Maestro FZ-1 Fuzz-Tone was the first fuzz distortion device to become widely available on the market for electric guitars and basses, although there had been other prototype devices made. It was designed and manufactured by Gibson. The Maestro FZ-1 (along with its almost identical update the FZ-1a) achieved a peak of popularity in the 1960s. The device was used by Keith Richards in the Rolling Stones' 1965 hit "Satisfaction" and became a favorite of many garage rock and psychedelic acts of the time. Gibson re-issued the FZ-1a in the 1990s, but later discontinued the model.*

*The Maestro FZ-1 sported a three-germanium transistor circuit with RCA 2N270 devices, powered by two 1.5-volt batteries, and a lead cable to connect it to an instrument (bass as it was originally intended, or guitar). Germanium devices are temperature sensitive, and the effect responds to the incoming signal's amplitude (volume) consistently. Upon release, Gibson/Maestro made a demonstration disc available, featuring sound samples of the different settings of the pedal and guitar combination, emphasizing the "brass-like" quality of certain tones. The circuit made its way into the body of Gibson's EB-0F "fuzz basses" (circa 1964). Before the Rolling Stones' hit, Fuzz Tone's sales were abysmal. In late 1965, when the original units sold out, the circuit was revised, using 2N2614 or 2N2613 transistors, with pertinent biasing network, powered by a single, 1.5-volt battery. The model was re-designated as the FZ-1a, keeping the same wedge shaped enclosure as the FZ-1. In 1968, an updated model with a different look and sound was introduced, with a circuit designed by Robert Moog using a 9-volt power supply and alternatively 2 or 4 silicon transistors, and labelled the Maestro FZ-1B. It went through 3 circuit revisions. In the 1970s Maestro came out with the FZ-1S Super-Fuzz, which had a distinctly different look and sound than previous models" – Wikipedia*

#### Article in Vintage Guitar with a picture of the inside

The Maestro is a simple pedal with just two knobs, located at the side of the pedal:

- **Volume:** controls the output level (model: Level).
- **Attack:** sets the amount of fuzz (model: Drive).

There's no Tone control.

*"It's an acquired taste... Personally, its "square wave" tone reminds me how really bad a fuzz can sound" – yek      \*ducks under table\**



## Micro Boost (based on MXR Micro Amp)



<b>Synopsis</b>	Based on the MXR Micro Amp, the classic clean boost pedal
<b>Tips</b>	It doesn't get any more simple than this: a single control
<b>Clips</b>	<a href="#">Pro Guitar Shop - MXR Micro Amp Boost</a> <a href="#">Vintage MXR Micro Amp vs Newer MXR Micro Amp</a> <a href="#">MXR M133 Micro Amp</a>
<b>Original Controls</b>	Gain (Drive)
<b>Clip Type</b>	Opamp
<b>Web</b>	<a href="#">MXR</a>

MXR, now owned by **Jim Dunlop**, was one of the largest effects manufacturers in the '70s and '80s. Several of their products are now considered to be classics: Dynacomp, Phase 90 and 100, Flanger etc.

The Micro Boost model is based on MXR's Micro Amp, an opamp-driven clean boost pedal.

Reportedly it is a redesign of the MXR Distortion + without distortion. It was one of the first of its kind. It doesn't provide distortion of its own (no clipping), it just increases the signal level, causing the amp to generate more gain. While many boost pedals claiming to be transparent still add color of their own to the sound, the Micro Amp really is very neutral.

*"Adding a preset amount of gain with just a single control, the Micro Amp is a great way to boost your signal for lead work or adjust between two different guitars with unmatched output (i.e. humbuckers to single-coils). It can also provide a permanent boost in a long effects chain where signal drop off is a problem" – MXR*

Keith Barr (president and co-founder of MXR), when asked about the Micro Amp (source: [Analog Man's Guide to Vintage Effects](#)):

*"That was one of the later boxes that we didn't really care about"*

### **ElectroSmash MXR Micro Amp Analysis**

The pedal's only control is **Gain** which adds up to 26dB to the signal. It's mapped to the Drive control in the model.

You can argue about the need for a drive block that acts as a clean boost in a digital environment, because there are less CPU-hungry solutions to boost level. As a matter of fact, there isn't much difference between the Micro Boost at default settings and a Filter block with Level around 9.

## Mid Boost (custom model)



<b>Synopsis</b>	A Fractal Audio custom model that boosts the middle frequencies
<b>Tips</b>	It works best with an crunchy-to-overdriven amp to make a solo stand out
<b>Clips</b>	
<b>Original Controls</b>	n/a
<b>Clip Type</b>	Silicon
<b>Web</b>	n/a

The guitar is an instrument that belongs in the middle frequency area. It has no business competing with bass (low frequencies), cymbals (high frequencies), etc. The mids are where guitars shine. Emphasizing those middle frequencies makes guitars cut through the mix far better than increasing volume. That's why certain amps, pedals and guitars are equipped with mid-boosting options.

More online information about EQ-ing:

- [Premier Guitar article about EQ-ing](#)
- [Fractal Audio wiki](#)

The Mid Boost model does just that: boost the mids. It's a custom model by Fractal Audio. These models have no specific real-life equivalents. They solely exist within the Axe-Fx II, FX8 and AX8, implementing Fractal Audio's ideas and improvements on existing pedals.

A similar effect can also be achieved by using a GEQ block, especially the 5-band Passive GEQ, but this drive model allows you to add distortion.

The Mid Boost model is a handy solution to make leads and solos stand out. The Drive parameter determines the amount of overdrive. The frequency range is not adjustable. The model also sucks a considerable amount of bass from the signal and can pass as a treble booster.



## M-Zone Dist (based on BOSS MT-2 Metal Zone)



<b>Synopsis</b>	Based on the BOSS Metal Zone MT-2, one of the best-selling (and most disliked) pedals ever
<b>Tips</b>	The Middle control is where it counts. Select the desired frequency and turn it up/down
<b>Clips</b>	<a href="#">MT-2 Metal Zone [BOSS Sound Check]</a> <a href="#">Metal Zone: Worst Distortion Pedal Ever?</a> <a href="#">That Pedal Show – Boss Metal Zone vs Dan &amp; Mick. Part 1</a> <a href="#">That Pedal Show – Boss Metal Zone: Part 2</a> <a href="#">Reverb.com: Boss MT-2 Metal Zone Distortion</a>
<b>Original Controls</b>	Level (Level), Low/High/Middle, Dist (Drive)
<b>Clip Type</b>	Silicon
<b>Web</b>	<a href="#">BOSS</a>

Does BOSS really need an introduction? This subsidiary of Roland has released an enormous variety of pedals over the years, and continues to do so today. Loathed by some because of their non-boutique character, highly praised by others because of build and tone quality. BOSS may be mainstream but they produced lots of classics, used by Prince, Gary Moore and many more.

The Metal Zone pedal from the '90s in particular is responsible for divided opinions. It was the era of Metallica's Black Album. The opamp-driven pedal enables players to turn their clean amps into heavy metal monsters with insane amounts of distortion and sustain. So much that it hardly matters what type of guitar is being played; the pedal makes them all sound the same. The fact that it provides EQ controls contributed greatly to its immense popularity among metal heads. It's one of BOSS' best-selling pedals ever, and at the same time probably the most hated. And it is still being sold by BOSS today. Many companies, including Analog Man and Keeley, offer modding services.

*"The MT-2 is the metal pedal that followed the HM-2. It was released a couple of years before the HM-3 and was an instant success. It is one of the best-selling Boss pedals of all time. The Metal Zone produces a distortion that is a bit smoother than the HM-2 and HM-3. In addition to the LEVEL and DIST controls it's got a 3 band sweepable parametric equalizer that gives complete control over the MT-2's tonal spectre" – Bossarea.com*

The MT-2 has a peak at 100 Hz and 5 kHz, and is scooped around 500 Hz.

More online information:

- [History of the Metal Zone](#)
- [Review on Tone Start](#)
- [Tips in Tone Report](#)
- [Gitarre und Bass #1, Gitarre und Bass #2](#)

The pedal has these controls:

- **Level:** sets the output level (model: Level).
- **3-band EQ** (Low, Mid, High): active EQ controls (model: Bass, Mid, Mid Freq, Treble).
- **Dist:** controls the amount of distortion (model: Drive).

The Mid control is where it counts. Select the desired frequency and turn it up/down.



*"Can't compare it to the original, but the Drive control in the model is peculiar. Its functionality seems to be limited to the first part of its range only. Can't hear much of a difference between Drive at 9 o'clock and 3 o'clock" – yek*

## Octave Dist (based on Tycobrahe Octavia)



<b>Synopsis</b>	Based on the Tycobrahe Octavia, a clone of an original Octavia which Roger Mayer designed for Jimi Hendrix
<b>Tips</b>	The recommended way to use an Octavia is to use the neck pickup, roll off tone on the guitar, and play close to the 12th fret. Works great with a separate fuzz after it
<b>Clips</b>	<b>Who Knows - Jimi Hendrix</b> <b>Tycobrahe Octavia</b> <b>Jimi Hendrix Experience – Fire and Hey Joe</b> <b>Jimi Hendrix - Purple Haze Live (1970)</b>
<b>Original Controls</b>	Volume (Level), Boost (Drive)
<b>Clip Type</b>	Germanium
<b>Web</b>	<b>Chicago Iron</b>

The story is that Roger Mayer, technician for Jimi Hendrix, designed a fuzz pedal for him that added an upper octave, using frequency doubling ("Octavio"). When a prototype broke down on the road, Hendrix took it to Tycobrahe Sound Company for repairs. After Jimi passed away, Tycobrahe started selling the design as the Tycobrahe Octavia without the consent of Roger Mayer. Different versions of the story exist...

Tycobrahe also sold the PedalFlanger and ParaPedal. All these devices now are extremely rare, sought-after and very expensive. Tycobrahe went out of business and the trademark now belongs to Chicago Iron, who produces the Octavian and other Tycobrahe designs.

### More Tycobrahe history

*"Our pedal, by itself, should give you a strong "fuzz face" like sound on the lower neck positions, and have a hint of octave doubling as you go up the neck, combined with a ring modulated sound. After the 12th fret especially on the G B and E strings, the octave becomes even more pronounced.*

*You may already know about the need to use the neck pickup, with the guitar tone knob rolled all the way off to start. The pedal will sing and bloom octaves on the higher registers when followed by a high output distortion pedal, (not all buffered output pedals will do) or an amp drive channel that is setup for distortion that has a good deal of sustain, like a Marshall super lead gets when turned all the way up. Then using the neck pickup and tone knob rolled off, switch on the Octavian.*

*Set the Octavian pedal volume knob to achieve unity gain with your amp's clean channel and the pedal boost knob all the way counter clockwise, or off. Depending on the pickups, anywhere from the 10th fret and up you should be able to play a note and the pedal will allow the fundamental note to sound and then bloom into the octave note. By adjusting the pedal boost and the volume knob of the guitar you can go from blooming octave to double note (chiming) octave to flute like octave only. It is a system, guitar Octavian, distorted pedal or amp, guitar output signal level and tone control that make this happen. It is the same with all the octave up pedals. Forgive me if you already know how to make the octave pedals sing on your setup, as there is only a certain way that it goes.*

*At this time you should be able to produce a light quieter octave and ring modulator sound when using only the Octavian in the signal going to your clean amp channel. Many references to this tone are on any Band of Gypsies album.*

*By switching on to your amp's gain channel, or switching on a fuzz/distortion pedal after the Octavian will produce a singing sustain that blooms into a clear ringing octave. Octave is not all it can do in this position. Chords in the lower positions are huge and fat. Not just for playing the Hendrix and Stevie Ray Vaughan set. This pedal blows many other distortion pedals off the stage when it comes to bottom end drive.*

*When you get your Octavian pedal fitted properly in your setup, the fun really begins. When used either way the Octavian pedal is very touch sensitive. It responds to your playing style. Pick light and the octave comes out earlier. Pick heavy and the fundamental note sustains longer. Same with the guitar volume knob, turn down the volume for more octave. By experimenting with the guitar's tone knob, you can produce many different sounds and octave "sweet spots" – Chicago Iron*

**Roger Mayer** has produced his own version of the pedal since the '80s:

*"The OCTAVIA is probably our most famous and distinctive creation. This guitar effect was designed in early 1967 and featured on "Purple Haze" and "Fire" by Jimi. Its unique tones can also be heard on such tracks as "One Rainy Wish", "Little Miss Lover", "Little Wing", "Machine Gun" etc.*

*The OCTAVIA produces a sound that is an octave higher than the note you are presently playing. This doubling effect is accomplished through electronic mirror imaging techniques that are program sensitive and also respond to the feedforward inputs of the player. The electronic circuitry is analogue in design and will react faithfully to all the subtleties and harmonic overtones from the guitar. The effect produced is very unique but human in quality. The unit that is manufactured today is representative of the latest evolution of Octavia that Jimi used and contains the feedforward and gating effect that my earlier evolutions lacked. The modern clones today often copy the Tycobrahe unit that in fact was a rip off of my earlier 24 volt versions. These units were not designed to work optimally with 9 volts and in fact you would be buying a clone of a copy so it makes sense to buy a unit from the man who invented it.*

*Electronically the OCTAVIA is an analogue circuit with the properties of a frequency doubler, envelope generator and amplitude modulator with addition frequency shaping filter circuits. The effect produced is subtle to wild depending on the settings used and will respond to the attack of the player. A clean tone from the guitar with say the tone rolled control rolled off will produce "ring modulated" overtones that characterise the solo to "Who knows". The sound is tangibly different if a fuzz unit is in front of the Octavia: an upper octave double is created, clearly demonstrated in the solo to "Purple Haze". The bright harmonics are more controllable if the neck pickup is selected and the tone control set to roll off the treble. The effect really comes into its own on the top E and B strings from the 7th fret up. A clean and precise picking style is essential with particular attention to accurate fretting techniques.*

*Jimi placed the Octavia after a fuzz and wah unit in most cases so it would react to the combined effects of both the wah and one or more fuzz boxes. It is important to experiment with how much signal you are driving the Octavia with as this has a great influence on the sound produced"*

Fulltone is another company claiming to have designed an exact copy of the original Tycobrahe Octavia (a copy of a copy) . His **Octafuzz** is used by Joe Satriani.

*"The Octavia was an effects pedal designed for Jimi Hendrix by his sound technician, Roger Mayer. It reproduces the input signal from a guitar one octave higher and/or lower in pitch, and mixes it with the original and added distortion fuzz. It reproduces the input signal from a guitar one octave higher and/or lower in pitch, and mixes it with the original and added distortion fuzz. The effect was used by Jimi Hendrix, and can be heard in guitar solos on the song "Purple Haze". Hendrix preferred to call the device the "Octavio", and it is often referred to as such. After Hendrix's death in 1970 one of the original Octavias became the basis for the redesigned "Octavia", manufactured by Tycobrahe Sound Company in Hermosa Beach, California, during the mid-1970s. A limited number of the devices were produced, and today a used one in good condition sells for over \$1,000 on eBay. Stevie Ray Vaughan owned nine of these devices" – [Wikipedia](#)*

More online information:

- [Explanation of the circuit](#)
- [Review in Tone Report](#)

It's a pedal that adds an octave on top of the played note, also adding fuzz if desired.

The recommended way to use an Octavia is to use the neck pickup, roll off tone on the guitar for best tracking, and play close to the 12th fret.

As mentioned above, the Octavia into a clean amp sounds a bit like a Ring Modulator. It's often used in combination with another fuzz, either before or after it.

The pedal has two controls:

- **Volume:** controls the output level (model: Level).
- **Boost:** controls the amount of fuzz (model: Drive).

There's no Tone control.



*"I like it best with a low Drive setting in front of a Face Fuzz, into a clean amp – yek"*

## Pi Fuzz (based on Electro-Harmonix Big Muff Pi)



<b>Synopsis</b>	Based on the Electro-Harmonix Big Muff Pi, a fuzz pedal that produces loads of sustain
<b>Tips</b>	Increase Tone, reduce the scooped character by increasing mids (try a couple of dB at 1350 Hz), and control the amount of fuzz with the guitar's volume knob
<b>Clips</b>	<b>The Smashing Pumpkins - Cherub Rock</b> <b>Big Muff Pi - Demo by Peter Stroud - Distortion/ Sustainer</b> <b>Jack White - Building a guitar + I fought piranhas ("It Might Get Loud")</b> <b>Electro Harmonix Big Muff Fuzz Demo</b> <b>Pro Guitar Shop – Electro Harmonix Big Muff Pi USA</b> <b>Big Muff Comparison</b>
<b>Original Controls</b>	Volume (Level), Tone (Tone), Sustain (Drive)
<b>Clip Type</b>	Silicon
<b>Web</b>	<b>Electro-Harmonix</b>

The Big Muff is one of the most popular fuzz boxes ever. Many famous players used one at some time in their careers: Carlos Santana, David Gilmour ("Comfortably Numb"), Smashing Pumpkins ("Cherub Rock"), Jack White, Jimi Hendrix, Black Keys etc. (No, it wasn't used on American Woman)

Electro-Harmonix released the Big Muff Pi in the late '60s - early '70s. Its owner Matthews states that "muff" points to the muffled tone, but there are other explanations (of a naughtier nature).

*"Hendrix and Santana were among the first to get a piece of the Pi, and for over 40 years the Big Muff Pi has been defining the sound of rock guitar. Revered by contemporary guitarists and rock legends for its rich, creamy, violin-like sustain, from Pink Floyd to The White Stripes, everyone still wants a piece of the Pi!" – Electro-Harmonix*

*"The Big Muff Pi ( $\pi$ ), often known simply as the Big Muff, is a fuzzbox produced in New York City by the Electro-Harmonix company, along with their Russian sister company Sovtek, primarily for use with the electric guitar. It is used by bassists as well due to the Big Muff's low-end frequency response" – Wikipedia*

A Big Muff is easily recognized by its long-sustained notes and rather dark tone. It is smooth and less raspy in comparison to other fuzzes. It sounds best before a clean amp.

EHX went out of business in the '80s. Its owner **Matthews** relaunched it from Russia ("Sovtek") in the '90s and took the company back to the USA.

The Big Muff has seen many versions, **as described here**. It has not been disclosed on which version Fractal Audio's model is based.

- **Description of the circuit**
- **ElectroSmash Big Muff Pi Analysis**



*"Our model uses a shelving filter but it's not based on a Ram's Head version."*

A characteristic of the Muff is its scoop around 1000 Hz. This makes it prone to disappear in the mix. This can be remedied by turning up mids. For example, as **suggested on the forum**, set Mid Frequency at 1350 Hz and increase Mid to 4.50 in the model.

The pedal has three controls:

- **Volume:** controls the output level (model: Level).
- **Tone:** controls the tone (model: Tone).
- **Sustain:** sets the amount of fuzz (model: Drive).



*"A Little Big Muff (single knob, single Tone switch) was my very first pedal in the '80s. I made my first home recordings with it. But no amount of fuzz could hide my lack of talent at song-writing. Stupidly I threw the pedal away when it started falling apart. Try Drive at 8, Tone at 10 and mids turned up (see above), into a clean amp" – yek*

## Plus Dist (based on MXR Distortion +)



<b>Synopsis</b>	Based on the MXR Distortion + pedal, designed to get more distortion from an already distorted amp
<b>Tips</b>	Players often set both controls at 3 o'clock
<b>Clips</b>	<b>MXR Distortion +</b> <b>Pro Guitar Shop - MXR M-104 Distortion +</b> <b>Pro Guitar Shop - MXR Script Logo Distortion + Randy Tribute</b> <b>Stomp Box Shootout. MXR Distortion plus new vs vintage</b>
<b>Original Controls</b>	Output (Level), Distortion (Drive)
<b>Clip Type</b>	Germanium
<b>Web</b>	<b>Jim Dunlop</b>

MXR, now owned by **Jim Dunlop**, was one of the largest effects manufacturers in the '70s and '80s. Several of their products are now considered classics: Dynacomp, Phase 90 and 100, Flanger etc.

The Distortion + is a germanium-based pedal, released in 1973. The "+" refers to the purpose of this pedal: adding more distortion to an already overdriven amp. Famous users include Randy Rhoads, Steve Vai (in **Crossroads**), Radiohead. Just like MXR's Phase 90, early "script logo" versions of the pedal are appreciated more than the later "block logo" version.

*"This little yellow box is responsible for those great distortion sounds heard on so many classic recordings. Set the Distortion control low and crank the Output knob to drive the front end of your amp for cool blues tones, or max out the Distortion knob for classic early '80s hard rock tone. There still isn't any distortion unit on the market that sounds like the Distortion+. Germanium-powered, soft-clipped distortion. Go from warm, tubey overdrive to gnarly fuzz. Classic early '80s hard rock tone" – MXR*

*"The MXR Distortion + ("Distortion Plus") is a distortion pedal originally designed in the 1970s by MXR Innovations. As its name implies "distortion," it's a 'distortion' (parallel clipping) but has a rather mild sound. It has been cloned many times, most famously by the DOD 250 Overdrive (a distortion). The pedal uses a single op-amp and a pair of germanium diodes to ground (parallel-push) for clipping in a very simple configuration with only Output and Distortion controls, no tone control; the pedal uses no discrete transistors. Turning up the Distortion control increases the amount of distortion and at the same time cuts some bass from the signal. This pedal is perhaps best known for its crunchy heavy metal sound that was featured by Randy Rhoads in his work with Ozzy Osbourne. Jerry Garcia of the Grateful Dead used this pedal exclusively for distortion in the late 1970s. Bob Mould of Hüsker Dü also used the Distortion + as part of his trademark guitar sound. Dave Murray of Iron Maiden has used Distortion + since the early 1980s. Thom Yorke of Radiohead has included the + for many of his signature distortion sounds, using a variety of guitars to achieve various tonal options"*  
– **Wikipedia**

The distortion is raspy and loose, almost fuzzy at high Drive settings, like overloading the inputs of a console.

### More history and version information

The pedal's controls are:

- **Output:** controls the output level (model: Level).
- **Distortion:** sets the amount of distortion (model: Drive).

Players often set both controls around 3 o'clock.



## RAT Dist and FAT RAT (based on two versions of the Pro Co RAT)



<b>Synopsis</b>	Based on Pro Co's RAT and FAT RAT distortion pedals
<b>Tips</b>	The passive Filter knob (model: Tone) is crucial to the tone
<b>Clips</b>	<b>Vintage ProCo Rat vs Newer ProCo Rat</b> <b>1988 ProCo Rat 1</b> <b>Pro Co Rat 1983 vs Pro Co Rat 1986</b> <b>1985 Pro Co Rat vs JHS Angry Charlie</b> <b>1986 Pro Co RAT</b>
<b>Original Controls</b>	Distortion (Drive), Filter (Tone), Volume (Level), plus additional controls on the FAT RAT
<b>Clip Type</b>	Silicon (RAT), Germanium (FAT RAT)
<b>Web</b>	<b>RAT</b>

The RAT is a famous distortion pedal by Pro Co. The black box is easily recognizable. Famous users include David Gilmour and Jeff Beck. Nuno Bettencourt never plays without a RAT; his signature Randall amp has one built-in, reportedly.

*“The RAT is a guitar effects pedal produced by Pro Co Sound. The original RAT was developed in the basement of Pro Co's Kalamazoo, Michigan facility in 1978. Numerous variations of the original RAT pedal are still being produced today. The basic RAT has changed in appearance over the years, but its tone has remained largely the same. Pro Co has also introduced tonal variations of the RAT, including the Turbo RAT, and You Dirty RAT, among others. The Pro Co RAT became very popular in the early 1980s, thanks in part to fame gained by its use by several artists.*

*It is a distortion pedal with a quite simple circuit, which can be broken down into four simpler blocks: distortion stage, tone control, output stage and power supply. The design is based around a single opamp, originally the Motorola LM308 (switched to Texas Instruments OP07DP around 2002-2003). The distortion is produced using a variable gain circuit with diodes shorting the output to ground to produce hard clipping of the input waveform. (...) This construction method is similar to the Boss DS-1 distortion pedal, although there are major differences between the two circuits. A major difference is the opamp used (the LM308), known for its poor slew rate; it largely accounts for the sonic difference between the two pedals” – Wikipedia*

The RAT's hard clipping can be harsh and hard, the passive Filter knob is crucial to its tone. In the first versions it was a conventional tone control, which was changed later to a treble cut. Make sure to experiment with it in the model, but be aware: it works the opposite way of the real pedal.

Pro Co has produced many versions of the original RAT, including the '87 RAT 2, '89 Turbo RAT, FAT RAT, You Dirty Rat, BRAT, Deucetone and others. The FAT RAT version can be switched between silicon and mosfet/germanium clipping and has offers more gain than the classic RAT. The upper mids are slightly scooped and smoothed, and the pedal sounds more like an amp.

More information:

- [RAT website](#), including [sound samples](#) and [history](#)
- [Tone Report](#)
- [Guitar Interactive](#)
- [ElectroSmash Pro Co Rat Analysis](#)

The classic RAT pedal has three knobs:

- **Distortion:** controls the amount of distortion (model: Drive).
- **Filter:** roll-off filter (model: Tone).
- **Volume:** controls the output level (model: Level).



The FAT RAT's additional switches haven't been modeled.



*"The filter knob has been modeled but it works backwards"*

*"The passive Filter knob (model: Tone) is crucial to the tone. Turn it down (it works the opposite way of the real pedal). Turn up Drive with a clean amp and turn it down with a dirty amp. Try Drive at 7, Tone at 3.50, Level at 6.50 with a clean amp, and Drive at 1, Tone at 0 and Level at 8 with a dirty amp" – yek*

As commented in the [original forum thread](#), the Rat Dist model lends itself well to experimenting with different clip types, because the clipping stage isn't affecting or affected by other parts of the circuit.



## Ruckus (based on Suhr Riot)



<b>Synopsis</b>	Based on the Suhr Riot, capable of turning a clean amp into a hot-rodded animal
<b>Tips</b>	The Tone control is a treble roll-off
<b>Clips</b>	<p><b>Suhr Riot Distortion – Clean Amp</b></p> <p><b>Suhr Riot Distortion – Overdriven Amp</b></p> <p><b>Suhr Riot Distortion Koji Comp – "Albatross"</b></p> <p><b>Suhr Riot Distortion demo by Pete Thorn</b></p>
<b>Original Controls</b>	Dist (Drive), Level (Level), Tone (Tone), Voice (not modeled)
<b>Clip Type</b>	Silicon
<b>Web</b>	<b>Suhr</b>

John Suhr started his company JS Technologies after having worked with Bob Bradshaw and Fender. Suhr is known for designing high-end guitars, amps, pedals, pickups etc.

The Riot is a pedal that can turn a clean or slightly dirty amp into a Marshall-esque high-gain monster. It's often praised for sounding like a real tube amp.

*"Riot is a versatile high-gain distortion pedal with the sonic characteristics and touch sensitivity of a high quality 100 watt tube amplifier" – Suhr*

The pedal has these controls:

- **Dist:** sets the amount of distortion (model: Drive).
- **Level:** controls the output level (model: Level).
- **Tone:** treble roll-off (model: Tone).
- **Voice:** three-way voicing switch (not modeled).

The Tone control is a treble roll-off. Start with the control turned fully CW, then adjust to taste.

Fractal Audio's model is based on the original Riot pedal, not the later Riot Reloaded.

*"Just like the BB Pre, the Ruckus is a great candidate to pick when you need to rely on a Drive block to get rock tones from a clean amp. Even with all controls at default." – yek*

## SDD Preamp (based on preamp in Korg SDD-3000)



<b>Synopsis</b>	Based on the preamp in the Korg SDD-3000 digital delay, as used by The Edge
<b>Tips</b>	With Drive set at around 1.75 and Level at 3.75, it adds delightful, addictive chime to any clean tone
<b>Clips</b>	<a href="#">U2 Dallas Schoo Tech and the Korg SDD-3000 Digital Delay Guitar Effects Pedal</a> <a href="#">DTS sdd-3000P</a> <a href="#">Korg SDD-3000 Preamp Demo</a>
<b>Original Controls</b>	Level (Level)
<b>Clip Type</b>	Opamp
<b>Web</b>	<a href="#">Korg</a>

Fractal Audio added the SDD Preamp model in firmware 17. At that time, it became known that guitar player The Edge (U2) had started using Fractal Audio gear. The Edge is known for being a fan of Korg's SDD-3000 digital delay. It's pretty safe to assume that there's a correlation between The Edge's use of Fractal Audio gear and the addition of this model.

The SDD-3000 is a fairly low-resolution (13-bit) 19" digital delay, released by Korg in 1982. Its embracement by The Edge contributed greatly to its popularity. The built-in preamp has a character of its own. The Edge runs the SDD-3000 even without its delays, just for its preamp. There are no specific preamp controls on the original device, except for input level control and I/O attenuator switches.

More online information:

- [Original SDD-3000 preamp, attenuators switches, The Edge's SDD-3000 settings and the pedal reissue](#)
- [SDD-3000 service manual](#)

Unlike the preamp in the Echoplex delay, there aren't many clones of the SDD-3000's preamp. The SDD-3000 has been **reissued a few years ago by Korg as a pedal**, with help of Dallas Schoo (pronounce: "shoe"), the guitar tech of The Edge.

Fractal Audio's SDD Preamp model can be used as a clean boost. But its main attraction is its ability to compress the signal a little and add sparkle without harshness. It enhances the tone, adds warmth and chime in a subtle way and makes the highs jump out and tingle, reminiscent of The Edge's signature tone.

*The SDD Preamp is part of most of my presets. With Drive around 1.75 and Level at 3.75 (everything else default) it adds delightful and addictive chime to clean tones, subtle and pleasing" – yek*

## Shimmer Drive (custom model)

<b>Synopsis</b>	A Fractal Audio custom model, aimed at boosting vintage amp models without master volume, like Plexi, Fender and VOX
<b>Tips</b>	It's a very bright model
<b>Clips</b>	
<b>Original Controls</b>	n/a
<b>Clip Type</b>	Silicon
<b>Web</b>	n/a

Fractal Audio has created a couple of custom drive models. These virtual drives have no real-life equivalents. They solely exist within the Axe-Fx II, FX8 and AX8, implementing Fractal Audio's ideas and improvements on existing pedals.

The Shimmer Drive is such a model. Its purpose is to boost amp models without master volume, such as VOX, Fender and Marshall Plexi. In short time, the Shimmer drive model has gained a lot of popularity among Fractal Audio owners.

It's a very bright and slightly nasal drive.

*"I keep Drive at 0 and everything else default" – yek*



*"The Shimmer Drive is my own creation. It is primarily intended to be used as a boost for Non-MV amps like AC-15/30's, Fenders and Plexis."*



## Shred Dist (based on Marshall Shredmaster)



<b>Synopsis</b>	Based on Marshall's Shredmaster distortion pedal
<b>Tips</b>	Turn down the Bass control
<b>Clips</b>	<b>Marshall Shred Master</b> <b>Marshall Shredmaster</b> <b>Marshall BluesBreaker - DriveMaster - ShredMaster Shootout</b>
<b>Original Controls</b>	Gain (Drive), Bass (Bass), Contour, Treble (Treble), Volume (Level)
<b>Clip Type</b>	Silicon
<b>Web</b>	

In the '90s Marshall released the Shredmaster, a distortion pedal. Some say that by today's standards, it isn't really a metal pedal for shredders. I think it's pretty high gain though. It hasn't received as much appreciation as Marshall's Bluesbreaker pedal from the same era. But it did become more popular after Radiohead started using it.

More online information:

- [Review of the Shred Master](#)
- [Circuit information](#)
- [Manual](#)

The pedal has these controls:

- **Gain:** sets the amount of distortion (model: Drive).
- **Bass and Treble:** bass and treble.
- **Contour:** changes the character of the mids, scoops the tone (model: Mid, Mid Freq).
- **Volume:** controls the output level (model: Level).



The model has been around since the first-generation Axe-Fx. It has a very raw (and noisy) sound. Its sustain is remarkable, it goes on and on and on ...

The controls are peculiar. Drive and Level act only in the first part of their sweep.

*"If I needed to rely on a Drive model for metal tones, I'd certainly choose the Shred Dist model over the M-Zone Dist model. I turn down Bass (3) and Treble (all the way)" – yek*

## Super OD (based on BOSS SD-1 Super OverDrive)



<b>Synopsis</b>	Based on BOSS SUPER OverDrive SD-1, marketed as a competitor to the Tube Screamer
<b>Tips</b>	With Drive turned down and Level up, the SD-1 tightens the amp's own distortion. Avoid this model when you're running low on CPU
<b>Clips</b>	<b>SD-1 SUPER OverDrive</b> <b>Pro Guitar Shop - Boss SD-1 Super Overdrive</b> <b>SD-1 SUPER OverDrive [BOSS Sound Check]</b> <b>Boss OD-1 Overdrive Pedal Demo</b>
<b>Original Controls</b>	Level (Level), Tone (Tone), Drive (Drive)
<b>Clip Type</b>	Silicon
<b>Web</b>	BOSS

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Dating back to 1981, this pedal still is one of BOSS' best-selling pedals. And rightfully so. It is the successor to the legendary '77 OD-1 (also yellow-colored), which supposedly was the first overdrive pedal on the market, following the fuzz rage and preceding the Tube Screamer. It incorporated several innovations such as a battery compartment, LED and electronic switching.

*"The SD-1 Super OverDrive pedal produces the warm, natural distortion of an overdriven tube amplifier while maintaining the subtle nuances of a player's picking technique. This is one of BOSS' more subtle and smooth overdrive pedals, perfect for blues and rock" – BOSS*

*"Unique asymmetric overdrive circuitry for a classic, natural tube amp growl"*

*"The OD-1 didn't have a tone control so the engineers felt that the tonal range was limited because of this. As an answer to the problem they came up with the SD-1. Comparing the two circuits reveals that they are very closely related and using the exact same overdrive circuit. When comparing the sound of the two pedals side by side, it is however obvious that they're not identical. Opinions are divided when it comes to the question, which one sounds best, but there is no doubt that they're both legendary overdrive pedals" – Bossarea.com*

Contrary to the Tube Screamer, the SD-1 features asymmetrical clipping, which is the type of clipping that occurs in tube amplifiers. It's often said that because of this, the SD-1 complements an amplifier, instead of changing it.

The pedal doesn't provide much gain, it isn't a distortion pedal. You can use it to drive a clean amp into blues territory, or to push a high-gain amp. With Drive turned down all the way and Level up, the SD-1 fattens the amp's own distortion and tightens bass. And it does so admirably, as demonstrated by its use by Zakk Wylde and many hard rock players.

Also contributing to its popularity is its amazing cheap price. You can buy it for 50 dollars or euros, and get a tone that competes with boutique overdrives.

No bad points? Yes, the original pedal is a little noisy because of bleed. And like the Tube Screamer it sucks bass, but that's easily solved in Fractal Audio's model by adjusting Low Cut.

The SD-1 has three controls:

- **Drive:** controls the amount of overdrive (model: Drive).
- **Tone:** controls the tone (model: Tone).
- **Level:** controls the output level (model: Level).

*"I had a SD-1 on my old pedalboard for a long time. Modded for less noise and more bass, and changed to "true bypass". The model is accurate. Turn down Drive all the way and turn Level to tighten up a dirty amp. Problem with the Super OD model is that it uses a lot more CPU than other models" – yek*

## T808 OD and T808 Mod (based on Ibanez TS9 Tube Screamer)



<b>Synopsis</b>	Based on the Ibanez TS9 Tube Screamer (not a TS-808 as the name would suggest)
<b>Tips</b>	The Tube Screamer is known for its mid-hump. Try the “low Drive and high Level” approach
<b>Clips</b>	<a href="#">Tyler Grund - Vintage TS9 &amp; TS808 Ibanez Tubescreamer Guitar Pedal Comparison Clips</a> <a href="#">Ibanez Tube Screamer 1983 TS9 vs 1981 TS 808</a> <a href="#">Four fun facts about the Ibanez Tubescreamer</a> <a href="#">1983 Ibanez TS9 Tube Screamer vs 1982 Boss SD-1 Super Overdrive</a> <a href="#">Analog Man Ibanez TS9 mod, with buffered and true bypass</a>
<b>Original Controls</b>	Drive (Drive), Tone (Tone), Level (Level)
<b>Clip Type</b>	Silicon
<b>Web</b>	<a href="#">Ibanez</a>

The holy grail of overdrive pedals and a key component of Stevie Ray Vaughan's sound. One of his Tube Screamers listed for \$11,000 in 2016. Other famous users include John Mayer, Eric Johnson, The Edge, Trey. Probably half of all players out there played through one at some time.



The first popular version (after the initial TS808 design) was the TS-808 Overdrive Pro ('80-'82) with the legendary JRC 4558D chip and small switch ("narrow box"). This one is considered to sound the best, and people are willing to pay for it. The TS9 successor from '82 sounded very similar with a bit more presence (and can be modded to sound exactly the same). A lot of versions followed.

**1979**  
**THE ORIGINAL TS808 (Narrow Box)**  
 The original Tube Screamer...  
**1980**  
**TS808**  
 The first overdrive pedal to be...  
**1982**  
**TS9**  
 The first overdrive pedal to be...  
**1984**  
**TS9**  
 The first overdrive pedal to be...  
**1985**  
**STL**  
 Super Tube...  
**1986**  
**TS10**  
 The Super Screamer...  
**1991**  
**TSS**  
 The Tube Screamer...  
**1992**  
**TS9 REISSUE**  
 The original Tube Screamer...  
**1998**  
**TS8DX**  
 The Tube Screamer...  
**2000**  
**TS7**  
 The Tube Screamer...  
**2004**  
**TS808 REISSUE**  
 The original Tube Screamer...  
**2008**  
**TS808HW**  
 The original Tube Screamer...  
**2010**  
**TS8B**  
 The original Tube Screamer...  
**2014**  
**TS808DX**  
 The original Tube Screamer...  
**35 Years And Still Screaming!**  
**The Tube Screamer: Reissuing A Legend**  
 As with most legends, few ever agree on the details...  
**The Limited Edition TS808 35th REISSUE**  
 Ibanez's 35th anniversary...  
**Ibanez Tube Screamer 35th Anniversary**

Vintage Tube Screamers were made for Ibanez by Nisshin/Maxon. Maxon now carries its own line of pedals.

*"The Ibanez Tube Screamer is a guitar overdrive pedal, made by Ibanez. The pedal has a characteristic mid-boosted tone popular with blues players. The "legendary" Tube Screamer has been used by guitarists such as Stevie Ray Vaughan to create their signature sound, and is one of the most popular and most copied overdrive pedal" – Wikipedia*

The Tube Screamer's unique feature is its "mid-hump": it emphasizes the middle frequencies. This helps to push the guitar to the front of the mix, makes the guitar sing and explains why it's a favorite of many blues players playing single coil guitars. Others dislike this pedal's characteristic tone.

The TS is also used by rock players to boost a rock or metal amp by tightening the amp's own distortion. Even SRV used a Tube Screamer to boost his overdriven amps, with Drive set low and Level set high.

Professional modders like Analog Man and Robert Keeley offer services for Tube Screamers. These mods provide more gain and more bass. Also, many manufacturers designed their own overdrive pedals based on the Tube Screamer.

The Tube Screamer uses symmetrical clipping, as opposed to asymmetrical clipping used in the BOSS OD-1, the competitor at the time, and the SD-1. It's said that the choice for symmetrical clipping was made because of the patent of BOSS on solid-state asymmetrical clipping.

*"If you look at the schematic between a Tube Screamer and a Boss OD-1, they're almost exactly the same thing," Lomas says. "The OD-1, though, is what they call an asymmetrical clipper. When you put a signal in it, it does not distort the top and bottom of the soundwave the same. Instead, it distorts one differently—the way a tube would. The original Boss OverDrive was designed to be a tube simulator, which was really big back then because, of course, most amplifiers were starting to get away from tubes. They were solid-state, and they really sounded like shit. So there was a market for tube-simulation pedals. I believe that's probably why the Tube Screamer was named the Tube Screamer.*

*The TS808 also differed from the OD-1 in that it had a Tone control, featured a common JRC 4558D integrated circuit (IC) chip, and had a small rectangular footswitch. "The Tube Screamer was really the first pedal I saw that had an IC in it," says Lomas. "All the overdrives prior to the Tube Screamer were built around transistors." Lomas contends that the sweet, vocal midrange sound the TS808 is known for has everything to do with that JRC4558D IC chip—which explains why Lomas and many other overdrive aficionados prefer the sound of the original over other permutations of the pedal that have emerged over the years" – Premier Guitar*

More online information:

- [Analog Man](#)
- [Geofex tech info](#)
- [Tube Screamer's Secret](#)
- [Premier Guitar: Green Giant – History of the Tube Screamer](#)
- [ElectroSmash Tube Screamer Analysis](#)

The pedal has three controls:

- **Drive:** controls the amount of overdrive (model: Drive). The entire range, from a little to maximum, is usable.
- **Tone:** controls the tone (model: Tone). Adjusting Tone doesn't affect the mid-hump.
- **Level:** controls the output level (model: Level).



Like the pedal, Fractal Audio's models of the Tube Screamer are popular. The manual states that they are based on the TS-808, but that should read TS9.

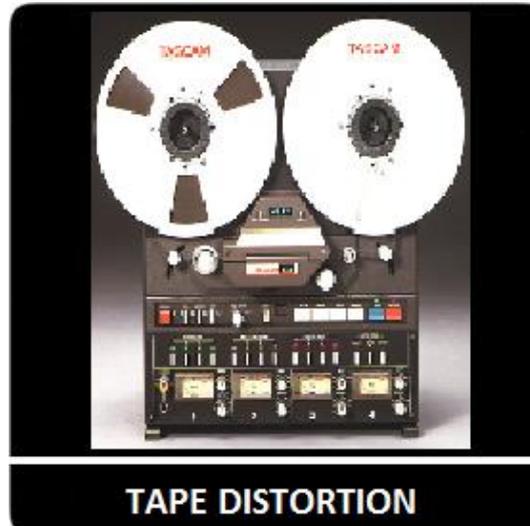
The T808 MOD model is an emulation of a Tube Screamer that has been modded for broader frequency range, more gain and more level.



*"The T808 drive is NOT based on the Ibanez TS-808 but rather the TS9 model"*

*"I like the "low drive - high level" approach: Drive at 0.50 and Level at 7" – yek*

## Tape Dist (based on Ampex reel-to-reel recorder)



<b>Synopsis</b>	Based on the EQ curve of an Ampex reel-to-reel tape recorder
<b>Tips</b>	Place after the Amp block to fatten things up and add a vintage vibe. Use Drive to dial in the amount of virtual tape saturation
<b>Clips</b>	
<b>Controls</b>	n/a
<b>Clip Type</b>	Silicon
<b>Web</b>	n/a

This model adds the tone print and distortion of an analog reel-to-reel recorder. It doesn't add much distortion, but it compresses the sound and makes it fat and chewy. Ritchie Blackmore is known for putting his sound through a tape recorder in his old days, after ditching his treble boosters.

More online information:

- [Sound On Sound](#)
- [Ledger Note](#)

Either put the Tape Dist model after the Amp block or before. You can use the Drive parameter to adjust the amount of distortion.

*"I do not use it a lot (I need the Drive blocks for other things), but a couple of my presets benefit greatly from this model, placed after the Amp block, with Drive somewhere between 5 and 10" – yek*



*"It's just a generic tape distortion simulator. I used an old Ampex EQ curve basically"*

*"The tape drive is meant to be used anywhere in the chain. I've been using it after the amp to fatten things up and it works well for that. Be careful though, the drive block is mono so you can get phase issues if you put it after a stereo effect"*



## Timothy (based on Paul Cochrane's Timmy)



<b>Synopsis</b>	Based on Paul Cochrane's Timmy pedal, that covers mild boosting to strong overdrive
<b>Tips</b>	For maximum transparency, turn up Tone and turn down Low Cut
<b>Clips</b>	<a href="#">Tim The Enchanter</a> <a href="#">Paul Cochrane TIMMY overdrive pedal demo</a> <a href="#">Paul Cochrane - Tim and Timmy</a> <a href="#">Paul Cochrane Timmy versus Timmy overdrive pedal Breadboard vs PCB</a>
<b>Original Controls</b>	Bass (Low Cut), Gain (Drive), Volume (Level), Treble (Tone)
<b>Clip Type</b>	Silicon
<b>Web</b>	

First there was the "Tim" pedal, similar to the Timmy, but in a larger enclosure and with a boost and effects loop. The name is based on Tim The Enchanter, a wizard in Monty Python's Holy Grail movie, reportedly. Timmy is Tim's little brother, who has outlived its older sibling. Both are hand-made boost/overdrive pedals that originally couldn't be bought in any shop or web shop. They had to be ordered by contacting the designer Paul Cochrane personally. The rave reviews on The Gear Page and other internet forums contributed to long waitlists. Boutique, but not expensive. These days you can buy the pedal in shops.

### Analyzing The Hype: Paul Cochrane Timmy (Wired Guitarist)

The Timmy is considered by some to be the best overdrive pedal in the world, because of its transparent, organic character and responsive crunch. It's a very flexible pedal that goes along with single coils as well as humbuckers and stacks well with other overdrives. You can also use it as a clean boost.

There has been some controversy around pedals from other manufacturers, accused of being exact copies/clones of the Timmy circuit.

The controls are:

- **Bass:** cuts bass (model: Low Cut).
- **Gain:** sets the amount of overdrive (model: Drive).
- **Volume:** controls the output level (model: Level).
- **Treble:** cuts treble (model: Tone).
- An internal switch lets you choose between two kinds of symmetrical clipping (more/less gain) and asymmetrical clipping (not modeled).



*"[The knobs].. are labeled Bass and Treble but they are Bass Cut and Treble Cut controls"*

*"To get "flat" turn Low Cut all the way down and Tone all the way up"*

The Bass and Treble knobs on the pedal work backwards, reducing as they go clockwise.

*"The bass control is pre-distortion. Most pedals roll off the low end before you distort the signal to keep things tight and clear. A lot of low-end distortion can get real muddy real quick. But what this means is you don't have the low end when you need it for cleaner settings. The bass control will allow you to keep the low end for the cleaner settings, and dial it out for the good crunchy stuff.*

*The treble control is post distortion. Like the bass circuit most pedals will have a preset hi end roll off to keep the pedal from being fizzy and noisy when distorting, but you'll lose the hi freqs for the cleaner settings. Being able to control the pre and post EQ gives you the ability to kill the evil mid bump a lot of pedals have preset into them" – manual*

*"I've never played the Timmy. But I did try the Venuram Jan Ray once, which is supposed to sound very similar, and it sounded fantastic through a small Hook amp – yek*

## Treb Boost (based on a treble booster)



<b>Synopsis</b>	Based on a treble booster like the Dallas Rangemaster and Hornby-Skewes
<b>Tips</b>	Use with the Normal (dark) channel of a Vox or Plexi, use Drive to dial in the amount of boost
<b>Clips</b>	<p><a href="#">Dallas Rangemaster original</a></p> <p><a href="#">Vox AC30 `63 JMI with a `66 Dallas Rangemaster Treblebooster</a></p> <p><a href="#">Analogman Beano Boost Treble Booster Pedal Demo</a></p> <p><a href="#">British Pedal Company Vintage Series Dallas Rangemaster</a></p>
<b>Original Controls</b>	Set (Drive)
<b>Clip Type</b>	Silicon
<b>Web</b>	

This model is based on a treble booster circuit. While it has not been disclosed which exact circuit, it's likely to be something similar to a Dallas Rangemaster or Hornby-Skewes Treble Booster.

Let's talk about the '65 Dallas Rangemaster as an example. It was designed as an accessory for amplifiers from the same manufacturer to brighten the amp's tone, similar to the Top Boost feature for early Vox amps. It's not a pedal, it sat on top of the amplifier. Guitar players soon discovered it did something else very well: push an amp into distortion. Its emphasis on certain frequencies makes the Rangemaster a non-clean boost, still staying close to the amp's raw tone (unlike a fuzz). It's a simple circuit and many clones exist, but because it's so rare, people pay thousands of dollars for an original. A popular clone is made by Analog Man: Beano Boost.

Famous Rangemaster users include Rory Gallagher, Ritchie Blackmore (Deep Purple's Child in time and Smoke on the water), Brian May, Tony Iommi (Black Sabbath's Paranoid), Mark Bolan, Wishbone Ash and Billy Gibbons. Some of these players also used other treble booster brands, such as Orange, Cesar Diaz and Hornby-Skewes.

*"The Dallas Rangemaster Treble Booster was an effects unit made for guitarists in the 1960s. Its function was two-fold: to increase the signal strength of the guitar going into the amplifier, and to increase tones at the high end of the spectrum (a treble booster).*

*The need for a treble booster arose in the mid-1960s as British amplifiers such as the Vox AC30 or Marshall JTM45, tended to produce a slightly dark, muddy sound when overdriven, particularly when used with humbucking pickups. A pre-amplifier that also boosted treble proved a solution.*

*The Dallas Rangemaster Treble Booster was first made in the 1960's by Dallas Musical Ltd., incorporated in 1959. It made guitars and amplifiers under different brand names, including Dallas, Shaftesbury, and Rangemaster.*

*The unit is simple, and consists of a grey metal box with an on/off switch, a potentiometer for the booster setting, and an in- and output. It is made to stand on top of an amplifier rather than on the floor. Its circuitry is simple, and contains (besides the potentiometer-- usually 10K, sometimes 20K--and the on/off switch) only a germanium transistor, four capacitors, three resistors, and a battery. The transistor was a Mullard or unbranded OC44 or Mullard OC71.*

*By the 1980s Treble Boosters had gone out of fashion. How many Rangemaster Treble Boosters were built is unknown. Due to limited supply on the second hand market they are collectible, even if the going rate is only a fraction of what it used to be in the mid-2000s. In Premier Guitar, Kenny Rardin describes his quest for one of the effects, which started with puzzlement over how Eric Clapton and Ritchie Blackmore achieved their tone; he spent years looking for a Rangemaster.*

*Rumours of Eric Clapton having used a Rangemaster Treble Booster during his stint with John Mayall's Blues Breakers have never been confirmed. Photos of the recording sessions of the "Blues Breakers With Eric Clapton" exist, but a Rangemaster Treble Booster is not visible in any of them. It is assumed the rumours started in the late 90's when clones of the Rangemaster Treble Booster"-- [Wikipedia](#)*

More online information:

- [Gitarre und Bass](#)
- [Vintage Guitar](#)
- [Premier Guitar](#)
- [Guitaraholicsu](#)

BSM ([www.treblebooster.net](http://www.treblebooster.net)) builds all kinds of treble boosters these days.

Fractal Audio's Treb Boost model is based on a silicon-based treble booster. The Rangemaster was germanium-based. Hornby-Skewes manufactured a silicon-based booster. The model sounds great into the normal (dark) channel of a Vox AC-30 or Plexi.



*"Boost was a switch and engaged the effect. Set was the amount of boost and is equivalent to Drive"*

## Tube Drv (based on two versions of the Butler Tube Driver)



<b>Synopsis</b>	Based on the Tube Driver, a pedal with a tube inside, as used by Eric Johnson on "Cliffs of Dover"
<b>Tips</b>	Keep Drive low and turn down the tone controls
<b>Clips</b>	<a href="#">BK Butler Tube Driver Demo</a> <a href="#">Marshall JVM 410JS with B.K Butler Tube Driver demo</a> <a href="#">BK Butler Tube Driver</a> <a href="#">BK Butler Tube Driver with Vox AC30</a>
<b>Original Controls</b>	3-knob: Out Level (Level), EQ (Tone), Tube Drive (Drive) 4-knob: Out Level (Level), Hi EQ (Treble), Lo EQ (Bass), Tube Drive (Drive)
<b>Clip Type</b>	LV Tube
<b>Web</b>	<a href="#">Butler Audio</a>

The Tube Driver is one of those rare pedals which contain an actual tube (12AX7). It was designed by B.K. Butler, a keyboard player, to sound like an overdriven Hammond organ (think Deep Purple).

### Article in Tone Report

Eric Johnson used a Tube Driver into a Plexi when recording **Cliffs of Dover**. Other famous users include Joe Satriani, David Gilmour, Billy Gibbons.

The name of the unit can cause some confusion. There's the Chandler Tube Driver, the Tube Works Tube Driver, the Butler Tube Driver... Butler's first prototypes were marketed by a 3rd party: Chandler. According to Butler, Chandler ran off with the design and began selling copies, excluding Butler from the deal. Butler then started Tube Works, later simply named Butler.

*"Actually the Chandler thing was a relatively minor incident in the overall history of my business activities. There's not enough room here to elaborate much, but the truth of the matter is that somehow Chandler decided at one point that they had been the designer of the product, came up with the TD trademark and that I was infringing on their IP. They obviously had somebody attempt to copy the electronics and the physical design of my TD, then produced and sold them. I don't know how many unauthorized units are out there. The mistakes inside are essentially within the EQ area and it would take too long to describe them. Also there is a basic ground loop mistake as well. The overall sound of the C copy is somewhat muted and not as clear on the upper harmonics, etc. Eric Johnson never used one of these copies as far as I know. All his pedals are ones I personally made. I never could understand why Chandler did that copy thing... They even challenged me in court and tried to convince the judge that Chandler was the actual owner of my design and the Tube Driver trademark. But the truth was obvious: In the end what was mine to begin with remains mine still... I then designed the black Real Tube pedal in 1986 which I still think is a superior pedal in some ways to the Tube Driver (ZZ Top's Billy Gibbons agrees) and then went on to design all my Tube Works SKUs: MosValve, Tube Works Real Tube rack products, combo amps and reverb... then the smaller 3 knob version of the Tube Driver was designed in an attempt to give an entry level price to tube lovers. Actually I never completely stopped making original Tube Driver pedals, but just didn't emphasize them so much during the early TW years. Later in about 1993 or 1994 I revived the pedal in earnest and named it after my 'love on 4 wheels', the model 911. Many will be glad to know that I'm now making a few new Tube Drivers per month again due to word of mouth 'push'. They have better components than the original as far as pots, capacitors, etc. I still use metal Switchcraft jacks and they're completely true to the original design" – **Tone From Heaven***

Based on the above, Butler will not be thrilled to read the Axe-Fx II Owners' Manual, because the description states: "Based on the Chandler Tube Driver".

*"There is NO Chandler Tube Driver... Never was a Chandler Tube Driver! They just marketed it for a while. But I do understand the confusion caused when I allowed their name to be included on my product. My lesson was well learned... enough said" – Butler*

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Eric Johnson uses a 4-knob Tube Driver (actually 5 knobs, because he has an additional Bias control) and turns off Bass and Treble completely. Most players seem to prefer the 4-knob pedal, the currently produced version, which is true to the original, according to Butler. When it comes to the models, Fractal Audio's 3-knob model seems to be the preferred model, based on the entry-level Tube Driver.

Original controls on the 3-knob version:

- **Out Level:** controls the output level (model: Level).
- **EQ:** controls the tone (model: Tone).
- **Tube Drive:** sets the amount of distortion (model: Drive).

Original controls on the 4-knob version:

- **Out Level:** controls the output level (model: Level).
- **Lo and Hi EQ:** control bass and treble (model: Bass and Treble).
- **Tube Drive:** sets the amount of distortion (model: Drive).



*"The 3-knob version sounds very different than the 4-knob version"*

*"Both of my actual pedals go silent with the Drive set to zero as would be expected looking at the design"*

*"The idea with the 4-knob version is to use the tone controls on the EQ page and leave the single Tone knob at noon. You can still use the Tone knob if you want but the model is only accurate with the knob at noon"*

*"It's a deceiving model. I started with the default settings and couldn't get a nice tone out of it, harsh and thin in the upper registers. After doing research I learnt to dial it in. Keep Drive low and turn down Bass and Treble to 0, going into a crunchy amp. That's where the model starts to shine" – yek*



## Zen Master (based on Hermida Zendrive)



<b>Synopsis</b>	Based on Hermida Zendrive, the “Dumble-in-a-box” pedal
<b>Tips</b>	Try Drive at 3 or 4, Tone at 3.50, Level at 3.50 and Low Cut around 400, with humbuckers
<b>Clips</b>	<a href="#">Zendrive 2013</a> <a href="#">Hermida Audio Zendrive Pedal</a> <a href="#">Hermida ZenDrive</a> <a href="#">That Pedal Show Hermida Zendrive Dave Kilminster's Live Rig</a> <a href="#">Hermida Audio Zendrive by Lovepedal</a>
<b>Original Controls</b>	Vol (Level), Gain (Drive), Tone (Tone), Voice (Low Cut)
<b>Clip Type</b>	Silicon
<b>Web</b>	<a href="#">Lovepedal</a>

This model is based on the famous "Dumble-in-a-box" pedal, used by Robben Ford to get thick Dumble tones from a Fender amplifier. It was designed by Alfonso Hermida, who has teamed up with Lovepedal to build his designs.

*"The standard in dynamic, touch-sensitive overdrive pedals. Cut through the mix with the incomparable Zendrive. Inspired by a legendary guitarist, the Zendrive delivers blues, country, jazz and fusion tones associated with some of the finest, most costly amplifiers in the market. Four knobs control the overall volume, gain, tone and voicing of the pedal. At lower settings, the pedal offers extremely light overdrive sounds reminiscent of tube amps set near the "sweet spot." At higher settings, the Zendrive increases in gain and sustain, producing tasty overdrive and low distortion tones" – Lovepedal*

The pedal excels at thick and creamy overdrive, with lots of mids but different than a Tube Screamer. It's very dynamic, responding to the player's attack. It works best with Fender amps, not Marshalls. Also, many players find that it works best with humbuckers.

### Review in Premier Guitar

The original controls are:

- **Vol:** controls the output level (model: Level).
- **Gain:** sets the amount of overdrive (model: Drive).
- **Tone:** controls tone (model: Tone).
- **Voice:** cuts lows (model: Low Cut).

The Tone control is not drastic, it's usable over its entire range.

*"I prefer a low-gain Zen Master, with humbuckers. For example, Drive at 3 or 4, Tone at 3.50, Level at 3, Low Cut around 400" – yek*