

catalinbread

MECHANISMS OF MUSIC

INTRODUCTION

Welcome to the Catalinbread SFT, 2016 edition! Thanks for downloading this user guide. It will help you to get the most out of your new SFT.

HISTORY

The newly redesigned Catalinbread SFT is our Ampeg® voiced foundation overdrive that bridges the “Get Yer Ya-Ya’s Out!” (Stones) and the Desert Sound (Stoner) eras. Fans of those classic amps will recognize the signature Ampeg tonal character and playing feel that made them famous.

QUICK START TOUR

This section will give you a quick overview of your new SFT. Plug in and follow along and then come back and read the rest of the guide for more insight into the controls and how to incorporate the SFT into your pedalboard.

First, let’s start by plugging the SFT into your amp without any other pedals in the chain. While the SFT works fine with non-true bypass pedals, this will give you the truest feel for what the SFT’s response is like. Then later we will go over its role and placement on your pedalboard.

Now set your amp for a relatively clean, neutral tone. On a typical Fender-style amp, set the controls: Volume 2-3, Treble 6, Bass 3, and Mids 6.

HOME BASE SETTING

OK, got your guitar all tuned up? Let’s start by setting the SFT in “Stones” mode (mode switch in the up position), Treble - noon, Bass - noon, Gain - noon, and Volume around 10:00. Go ahead and jam for a while through this setting. This is the “home base” setting for the SFT and is a good place to start when dialing in the SFT. You should hear a nice mild overdrive that is voiced to be relatively flat compared to when the pedal is off but with a slight emphasis on the lower midrange. This is the turned-up but not cranked big Ampeg response and is great for Stonesey styles, roots rock, and blues. Roll the volume control on your guitar back and you should hear the sound clean up really nicely. Now, you can fine tune this setting by adjusting the Treble, Bass, and Gain controls slightly. The controls have an ultra-wide range of response and fine adjustments to the controls will allow you to dial in just the right amount of bite, body, and big amp grind.



CLEAN BOOST WITH EQ

Now turn the Gain way down (minimum to around 10:00) and the Volume up and adjust the Treble and Bass to suit. You'll find that SFT has a huge amount of clean boost available! OK, now go ahead and start turning that Gain knob up. You'll find you'll want to adjust the Volume and tone controls to balance things out. The controls on the SFT are interactive and can yield a huge range of tonal responses.

FUZZ MODE

OK, OK, I know you're chompin' at the bit to press that Stoner button. Go ahead. Do it now. Yes, much more output and much more gain! You've just morphed the SFT from the classic big Ampeg response to a rippin' distortion pedal that can enter well into fuzz territory! In Stoner mode, the gain and tone is raw and unleashed and at certain settings it will become a bucking bronco. Can you stay on without getting thrown off? :-D Let's try full fuzz mode now: Gain - full, Bass - full, Treble - minimum, Volume - 9:00 (there's a LOT of output!). Flip your guitar to the neck pickup, roll the tone back on your guitar, and have some fun with this wild fuzz tone that has a huge amount of low-end wallop and amazing sustain!

HUGE RANGE!

So now you've just experienced how the SFT can go from a great clean boost with EQ, to authentic big tube amp response, all the way to fuzz meltdown mayhem. Read on to learn more about your new SFT!



SFT CIRCUIT ARCHITECTURE

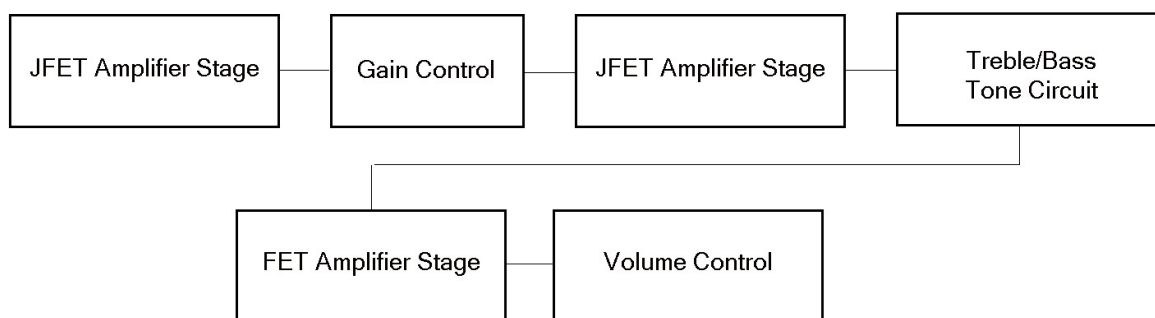
(Warning: nerd content! Read on if you're interested. Skip to the next section if you just want to know how to twist the knobs.)

The SFT is based on typical circuit elements used in various classic Ampeg amps. At the heart is the tone control circuit used in almost every Ampeg - the "Baxandall" Treble and Bass shelving circuit. (While most people refer to it as "Baxandall", in the Ampeg, and therefore Catalinbread implementation, it is in its passive form so it should be more accurately called the "James" tone circuit, but I digress!) The cool thing about this Treble and Bass circuit is that it can cut and boost and also be relatively flat when the controls are set to noon. In contrast, the classic Fender/Marshall tone stack actually can never be set to a flat response, which is not necessarily a bad thing since that is what gives those amps their character. The big Ampeg amps, and therefore the SFT, can achieve a relatively broad, flat tonal response.

The SFT uses gain stages in a very similar way to the big tube amps after which it is modeled but of course there are no tubes. There are no op-amps or clipping diode circuits either! Instead, the SFT uses JFETs in a configuration that we have refined over the years to get the most authentic and dynamic tube amp response possible.

Now let's take a look at the basic block diagram for the SFT. Why? Understanding how the signal flow is handled will give you better insight into how the controls work and how to get the response you're after from the SFT.

SFT Block Diagram:



You can see that the SFT features three gain stages in a configuration very typical for tube amps. The Gain control is right after the first gain stage. And the tone stack is towards the end, right before the last gain stage.

What can we observe from this architecture? Well, one important thing is that since the tone controls are before the final gain stage, and since the tone controls can boost quite a bit, you can, in effect, overdrive that last gain stage harder by turning the tone controls up, especially that Bass knob. So the takeaway is: for the cleanest response, set not only the Gain control low but also set the tone controls relatively low. And for maximum distortion, do what you've always done with a dirt pedal - crank everything up!



NO CATHODE CAPS!

If you're familiar with how tube amps work you'll know that most amps employ cathode bypass capacitors for each tube preamp stage to increase gain and shape frequency response. However, Ampeg typically did NOT utilize cathode caps since their goal traditionally was a relatively linear "hi-fi" response. The SFT also doesn't use "cathode" caps. (Except in Stoner mode!) The point in describing all this to you is that the SFT is very true to the actual tube circuits it models. That is how we can achieve authentic tube amp response.

When you switch to Stoner mode, you are adding in a "cathode" cap to jack up the gain and also removing a negative feedback loop. The negative feedback loop is something you see in most tube amps and it helps to keep things tight and controlled and the gain within reasonable limits. Stoner mode allows you to go beyond reasonable limits! :-D

Don't worry, there won't be a test on this but keeping the block diagram in mind as you continue to become acquainted with the SFT will be handy.

THE CONTROLS IN DETAILS

STONES/STONER MODE

First, let's talk a bit more about the Stones/Stoner mode switch. This switch completely reconfigures the SFT and makes it become a completely new beast. Think Jekyll and Hyde! Two pedals in one!

If you want the most authentic big Ampeg tube amp response, use Stones mode. If you want a rippin' high gain distortion sound that can achieve huge fuzz tones, use Stoner mode.

Since the SFT basically offers you two pedals in one, we'll go through how the controls work for each mode.

STONES MODE

TREBLE/BASS KNOBS

Set to noon for a relatively flat response. Below noon to cut and above noon to boost. These are treble and bass shelving controls and have been carefully voiced for the SFT.

How do I control the midrange?

In Stones mode, setting all controls at noon will give you a flat response with a slight emphasis on the lower mids to give that big bodied Ampeg sound. To get more of a mid-hump response, try starting with Bass at 9:00 and Treble at noon. The Treble control is voiced to boost not only the highs but the upper mids as well so you can turn the Treble control up a bit to get more mids to crunch through. Try setting the Treble from noon to about 1:30 to boost some upper mids without increasing the treble too much. Also, turning the Gain control up will provide more push in the midrange as well.

And if you want to scoop the mids, just turn the Treble and Bass controls up. This is most effective when you run with lower Gain settings.

RANGE OF BASS CONTROL

Turning the Bass control down from noon gives a high-pass shelving response around 200hz. This allows you to tighten up the response and attenuate those woolly and woofy frequencies.

Turning up the Bass control boosts all those frequencies. You'll notice as the Bass control is turned towards maximum there will be a huge bump in low end. Huge. For most purposes that is too much boost of the low end! That huge amount of low end boost is there so you can crank it for the fuzz setting in Stoner mode.

For most uses, you'll probably find the Bass control wants to be somewhere between 9:00 and noon on the dial.

RANGE OF TREBLE CONTROL

Turning the Treble control down from noon gives a low-pass shelving response at around 1000hz. Typically you'd turn the Treble down below noon in the following situations: you've got the Gain set low for clean response, you're in Stoner mode dialing in a woolly fuzz tone, or you're playing bass.

Turning up the Treble control first gives you a nice kick in the upper mids from noon to 2:00 and then beyond that the sound will get increasingly more trebly.

For most uses on guitar in Stones mode, you'll probably find yourself setting the Treble from noon to 2:00.



GAIN KNOB

In Stones mode, the range of the Gain knob has been tuned to be very similar to that of the volume control on a big non-master volume tube amp. So, from minimum Gain to about 10:00, the response will be clean and bright. From 10:00 to noon, you'll get edge-of-breakup response that is very sensitive to pick attack. From noon to 2:00, you'll hit the overdrive sweet spot, just like that of most tube amps. And from 2:00 on, you'll get increasing crunch and saturation.

Now, just like with real tube amps, the amount of overdrive you get with the SFT depends on the type of guitar you're using. So, if you're using a Fender-style guitar with vintage output pickups, you'll have to turn up the Gain more to crunch it out or use a booster/fuzz pedal in front. Just like how you would with a real amp. Or, if you're using something with a humbucker, you'll have to turn the Gain down to get a cleaner response. Some guitars with high-output pickups may crunch out the pedal even with the Gain turned down. Just like with a real amp! Also, just like a real amp, SFT responds really well to turning your guitar's volume down. So you can set the SFT up for a nice saturated crunch and clean up instantly by rolling your guitar volume back.

Also just like real non-master volume tube amps, you'll find that you set the tone controls differently depending on where the Gain is set. If you're going for a clean sound with the Gain set below noon, you might end up using less Treble but more Bass. And conversely, if you're going for cranked up amp sound, you'll find you'll want to turn the Bass down and the Treble up to get a good crunch sound that cuts through the mix.

VOLUME KNOB

The SFT was designed to give a huge amount of output even with clean low gain settings. So, if you're running the Gain control really low, you'll find that there is plenty of output on the Volume knob to boost that clean sound quite loud!

But if you're running higher gain sounds, especially in Stoner mode, you'll find that you won't have to turn the Volume control up much at all.

STONER MODE

When you're in Stoner mode, the controls still work basically the same way but you'll find that you will run the Treble, Bass, and Gain controls lower than you would in Stones mode due to all the extra gain and frequency content.

And be forewarned! In Stoner mode, turning up the controls to extreme settings will result in extreme sounds and potentially noise! If you want tighter distortion sounds in Stoner mode, just start with the Treble, Bass, and Gain controls at the lower settings and go from there. Also, don't forget about the Volume and Tone controls on your guitar. You can use those to tame Stoner mode and still have room to unleash the beast when it's time. Stones mode is super-refined and Stoner mode is raw and unleashed!

Where to Put Your SFT in Your Pedal Chain

The SFT is one of our Foundation Overdrives - pedals can give you big, cranked up amp response at non-cranked volumes. To use it as intended, you'll want your amp set to a relatively clean, flat response. In fact, the new SFT is our widest ranging Foundation pedal yet and responds particularly well to fuzzes, boosts, and overdrivers.

While you can (and should) just experiment and find out what works for you, this section will give you insight on how to use the SFT as intended.

The SFT becomes the foundation of your pedalboard. It gives you clean to crunch response with a flick of your guitar's volume knob. It acts like an amp with boosters and fuzzes placed before it.

So let's do a little exercise here and build up a pedalboard using the SFT as its foundation. First, we start with the SFT, in Stones mode, with the Gain set on either side of noon-ish. We could stop here and get a nice range of tones just from our guitar's controls and our playing attack. But now we want to add in some reverb or delay. Typically, you'll add those after the SFT. But in some cases, you might place a delay pedal in front such as if you're using our Belle Epoch tape echo and want it to sound like you're running it into a cranked up amp. If you want your reverb or delay to sound like it's in the effects loop or run post, place them after the SFT (assuming your amp is set fairly clean).

Now, all those boosters, fuzzes, and tube screamer style overdrives you've collected? Put those in front of the SFT. The SFT was designed specially to respond like a big tube amp with them. In general, the SFT should be the last dirt or gain pedal in your signal chain. You'll find that using the SFT as your basic guitar sound and then boosting it with your collection of boosts and fuzzes will give you a huge tonal palette to work from!

Wah-wahs and filters? Most likely you'll also want to run those in front of the SFT. Phasers? Probably in front too. Flangers and chorus? Hmmmm. Those could go either way.

Here is a list of types of boosting effects that you'll get the best result from by plugging them in front of the SFT:

- Clean boosts and treble boosts
- Fuzz pedals
- Octave up and octave down pedals
- Overdrivers such as tube screamers and klons.
- Wah-wahs and filters

The main idea with a Foundation Overdrive is that you leave it on the entire time and get your range of gain by using the guitar's volume controls to get clean sounds and to use boosters and fuzzes in front to get higher gain sounds.



GUITARS AND THE SFT

Like the actual amp, the SFT is responsive to the type of guitar you're playing into it, especially in Stones mode. If you're playing vintage output Fender guitars, the tone will stay cleaner longer as you turn up the Gain knob. If you're playing a humbucker or other higher-output style of pickup, the SFT will break up sooner on the Gain knob. But you'll always be able to get cleans by turning your guitar's volume down.

BASS GUITARS AND THE SFT

And of course the SFT works great on bass. The SFT can be used to warm up a sterile sounding solid-state bass amp without adding any overdrive. Just set the Gain control low and also start with the Treble and Bass controls low and dial up as needed. The SFT will give you a much nicer playing feel that is more responsive to your playing and a great woody bass tone. For overdriven and fuzzed-out bass tones, most of the information given above in this guide applies as well.

AMPLIFIERS AND THE SFT

Generally speaking, the SFT works best into a tube guitar amp set relatively clean and neutral. However, it can work great to further overdrive an amp that is already overdriven as well, although this was not its design intention. If you are running a Fender style amp, try setting the tone controls as follows Treble 6, Middle (if your amp has it) 6, Bass 3, and Volume between 2-4. This is generally the best response from a Fender amp and in fact are the basic settings used in the development lab when voicing our pedals.

A note about tubes in your amp. For the best tone and response from your SFT (and your whole pedal chain, really) make sure you have good sounding tubes in your amp. In particular, the first tube in the pre-amp stage of your amp is critically important as your SFT will be driving this tube. A cheap or faulty tube can make your SFT sound weak, too gritty, farty, or just plain uninspiring. Do some research on tubes for your amp and experiment with different first stage preamp tubes in conjunction with the SFT to really fine-tune your tone.

POWERING UP THE SFT

You can power your SFT with any quality power supply designed for use with effects pedals. The output should be a negative tip DC from 9 to 18 volts. If you want more volume, headroom, and percussive attack, try running an 18 volt power supply. A 9 volt power supply will have a slightly softer sound that saturates more easily - it's sort of like the difference between a 50 watt and 100 watt amp! Definitely try it on 18 volts though - there's quite a difference! 18 volts is great for playing with the band. You'll get great attack and clarity with power to cut through the mix. You can also try a battery that is drained down to as little as 3-4 volts to get an even softer sound that is great for late night jam sessions when you don't want to wake anyone up! Or use a power supply that is capable of providing "starved" voltage. It's sort of like running a Variac and you get the same benefits - a "browner" sound and less volume! We encourage to try these different powering options to see what you like the best!

To change the battery, just remove the four screws on the bottom plate. There are no other user controls under the hood. As usual, when running with a battery, unplugging the input jack will turn off the power.

A NOTE FROM THE DESIGNER

The SFT has always been a favorite with us for guitar and bass. But dwindling supplies of JFETs and the desire to go next-level with the SFT concept led me back to the breadboard to conjure up a next-generation SFT. After months of experimentation and fine-tuning, I'm happy to say I met my goals for the new SFT. But it wasn't an easy or quick process! Our standards keep going up as we learn more and more about this stuff. And I'm relentless, obsessive, and picky when it comes to getting a circuit just right. You see, it's not really about engineering or electronics. It's about being a guitarist and knowing exactly what something should sound and feel like. So I don't spend much time with scopes and calculators and transfer curves. Oh, believe me, I know about that stuff, but that's not what leads me to a design that just feels right when you plug into it. The way I roll, I sit in front of the breadboard, with guitar in hand, and I keep tweaking the circuit until that guitar in my hand says, "Yes! That's it!" It's a feel thing. Here's an analogy: You could write a song by applying music theory and come up with something technically correct but lacking in feel, lacking in substance. Or you could get out of your mind and jam out until something brilliant happens. Often times when that happens, the musician will say, "It was as if I was a channel and receiving it. I was in the zone, man!" Same thing with circuit design. So yeah, I spend a lot of time completely out of my mind. You're welcome ;-)

What was the hardest thing to dial in with the new SFT? That elusive not-clean yet not-dirty sound. A great tube amp does it. You turn it up halfway or so and there it is - not totally clean but not really crunching either. It breathes. It bounces. It responds. Getting a pedal to do that is not easy. Getting a pedal to do that while also making the pedal able to become a pummeling JFET fuzz pedal is even harder. I persisted until I got there! It was all about gain staging. Finding the right bias points. Tuning the tone stack. Making the circuit resonate just right so the pick attack is right. So the thump of the low E string is right. When you're finally done it seems obvious. Getting to obvious is not so obvious though!

Enjoy your new Catalinbread SFT and I hope it inspires many riffs and songs for you!

... Howard

P.S. Don't forget to check our YouTube feed for demos and insight into the new SFT!

Drop me a note!
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