



MOSFET BASS DISTORTION

Thank you (!!!) for your purchase of the Damnation Audio MOSFET Bass Distortion Pedal. I think it's almost as awesome as you are! This pedal has many great sounds in it and I want you to experience them all so I'm going to assume you've never used a distortion pedal before and tell you how to get the sounds you want out of this pedal.

But first...please allow me to indulge...me by allowing myself to talk about...myself to hopefully give you some background into the design of this pedal (so hopefully you can understand the method to my madness!):

Like some of you I play **HIGH** output low tuned basses in hard rock and metal bands. I never had much luck with off the shelf pedals because they weren't designed for me. I've been building my own pedals for some time and decided I could build a pedal that met my needs and maybe some of my friends too.

So at its core the MOSFET Bass Distortion (free 6-pack for whoever comes up with a better name) is a CMOS dirt box with excessive boosting, buffering, and filtering to get the sounds I want. I was (and still am) inspired by Craig Anderton's work with linear biased CMOS hex inverters in his *Electronic Projects for Musicians* book. A hex inverter is a chip with six (6) CMOS inverters which are made up of MOSFETs and can be tricked into producing gain.

The gain range is wide and for lighter output basses might not do anything until well after 12:00 on the dial. That's why I included an up-to-30dB boost (adjustable with an internal trim pot) on the front end to help with weaker basses and guitars.

The EQ is powerful but hyped (huge lows and sparkling highs with a low mid cut to eliminate mud frequencies in my bass and the previous gain stages). I play a pretty clean and simple head and prefer to get my tones from my pedal board. I included an E.Q. Shift switch that moves the center frequency up a bit and "flattens" the E.Q. somewhat for when I play a rig with a sexy E.Q. or if someone doesn't like the frequencies I picked for the tone knob.

I also included a depth control on the first distortion stage to control the amount of low end in the dirt circuit. You could goose the low end with the depth knob and turn the tone towards the high side to get a crunchy fuzz or turn the depth and tone counter-clockwise to get a fat overdrive sound.

There is also a parallel FET clean circuit that is mixed after the EQ. This works well with the tone clockwise and the depth low to get a clean sound with some bite. The clean channel has some mild low pass filtering above 1kHz that helps the blending of the clean and dirt channels sound much more natural. I usually hate clean blends but I find myself wanting to use this one more and more.

This pedal works on standard 9V boss-style power supplies and batteries. I love batteries so I included it against my better judgement because the current draw is quite high (up to 36mA) when engaged. So a regular battery can get you about 10 hours. Great for portability but not so great for the environment. So I hope you hate trees as much as I do.

One thing you will notice is a lack of extreme fizzy highs when you run it direct. I included some low pass filtering on the distortion side of the circuit just for this purpose. It is not a "cab sim" per se but I would have no problem running direct at a club (the scourge of metal bassists!). I hate when the sound guys run my fuzzes through the mains and the audience gets attacked by a swarm of bees they can hear but never see. So, you're welcome.

OK...now for the real talk...Damnation Audio is a one man project with limited time and means. What this means is that I build things made to order one at a time. I have not built 100's of these yet and 99% of my building experience has been as a hobbyist and consumer so please bear with me as we travel the road to a burgeoning commercial outfit together.

Thanks for reading.

Now back to how I can make you sound good...no I mean great!:

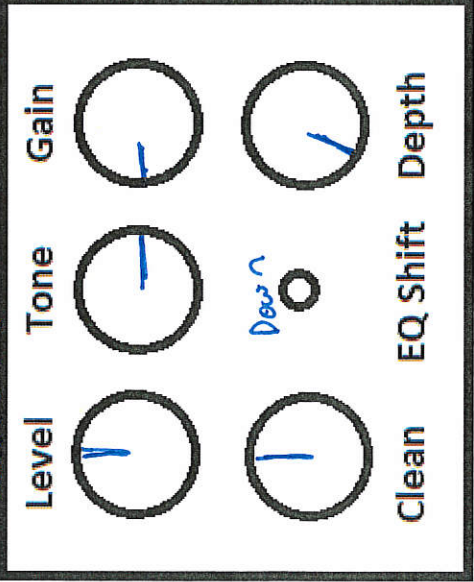
Step 1: Make sure you are using a Boss-style 2.1mm negative tip 9V power adapter (I recommend a One Spot – a real one. Not those Chinese knockoffs. Don't be cheap) or a regular 9V battery. Anything over 9V can and will kill certain parts of this circuit. So will plugging in a non-compatible power supply, so pay attention and don't do anything stupid. We'll all be disappointed. The pedal is powered on when you plug into the input jack or when you plug in a power adapter. So if you're using a battery (and no power adapter) make sure to unplug it when you're done.

Step 2: Start with the pedal and your rig turned off. This pedal is a true bypass pedal and I made every attempt to avoid the dreaded pop but sometimes it can happen (especially with all the knobs on "11") so I like to plug everything in with the amp off and turn the pedal on and off a few times to work out the demons trapped inside. Then you should be good to go.

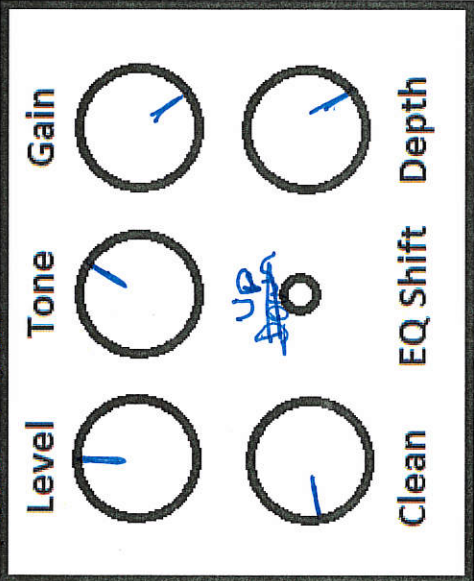
Step 3: What follows is my recommended order of knob tweaking to get a good tone quickly. Once you are comfortable with the controls you'll be able to make this thing do what you want. As long as what you want is a distortion pedal.

1. Turn all the knobs fully counter clockwise except the **Volume** and **Tone** controls at noon. Turn the Bypass footswitch off (LED off). Then turn your amp on.
2. Now turn the effect on. It may be quiet because the **Gain** knob will be at minimum. This pedal was designed to accommodate high output instruments so the minimum gain is purposely low. I have included a trim pot on the inside to adjust the input gain from about 3dB to 30dB. I have it set somewhere in the middle to start. If you find you can't get enough gain or if you have too much you can tweak this trim pot to taste. Do not adjust the other one usually covered in some sort of goop (as a deterrent). You could accidentally mess up the bias of the clean channel and will incur at least \$1,000,000.42 in repairs.
3. Now turn the **Gain** up until you get the amount of hair you're looking for. **THE TRICK IS TO TURN THE GAIN UP UNTIL THE DISTORTION IS CREAMY – NOT "SLATTY"**. You may need to adjust the **Volume** up or down as you go.
4. Now this is the best part. If you find the dirt sound has too much grind and not enough booty you get to decided how to fatten it up:
 - a. If you want the dirt to be thicker with more weight and fuzz then adjust the **Depth** control clockwise. The signal will get crunchier as you go until it starts to square wave like a thick doomy fuzz so take caution or not. I'm not in charge of your safety.
 - b. If you like the grind where it is but want some clean bottom end (more overdrive/less fuzz) then turn the **Clean** knob up to blend in some FET boosted clean-ish bass signal. There is some mild low pass filtering above 1kHz on the clean signal to help it blend smoothly with the distorted signal. I like to turn the **Clean** knob up until I hear the "clack" of the clean bass then I turn it back a bit. This gives you that grindy tone with a clean bottom you get from pushing a tube amp or biamping clean and distorted bass rigs. A proper mix of clean and dirty signals is essential to avoiding the "bees-in-the-background" sound you can sometimes get from blending signals.
 - c. I always end up with a mix of these two controls (**Clean** and **Depth**) so feel free to experiment. They are not mutually exclusive.
5. Now is when you need to think about your EQ. This pedal is not a "transparent" distortion. The distortion circuit has a strong low mid emphasis so the **Tone** control is centered around 300Hz (with the EQ **Shift** in the "DOWN" position). There is a slight dip at the center frequency to remove some muddiness from the preceding gain stages. Moving the **Shift** switch into the "UP" position increases the low mids by shifting the **Tone** control to 600Hz with a smaller dip at the center frequency. I've found I do not prefer one setting over the other. It all depends on the sound I'm going for at that particular moment. I like to keep the **Tone** knob at noon when I first switch the pedal on because its sounds great in that position. I usually have the pedal on all the time so the knob lets me add more bass (turning it counter-clockwise) or more highs and mids (turning it clockwise) quickly without messing with my amp's settings.
6. That's it. You're done. Happy Shredding!

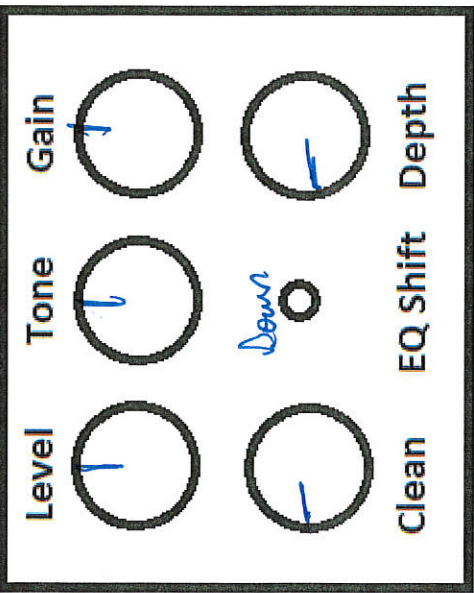
A touch of hairs



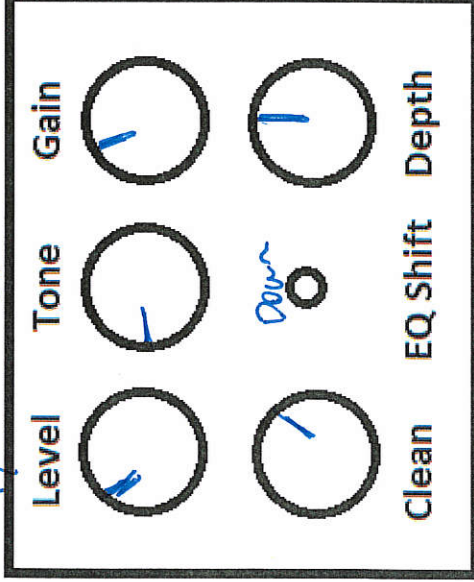
Fuzz it all!!!



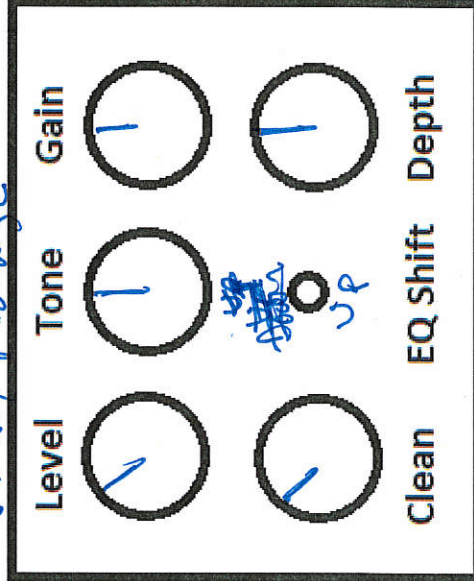
bring it out



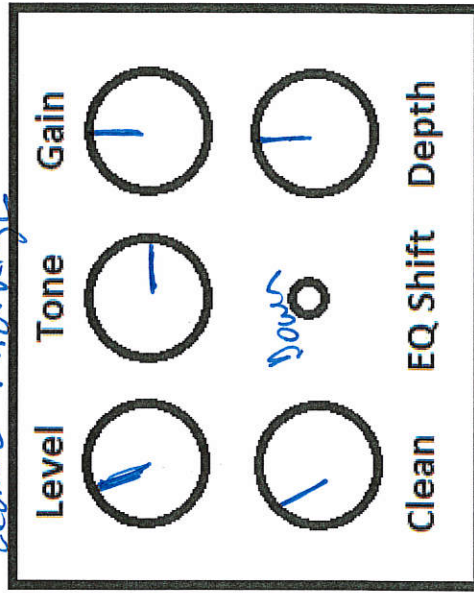
Burpy low Mids















Grithy Midrange















Exotic Midrange












Level	Tone	Gain
		
Clean	EQ Shift	Depth
		

Level	Tone	Gain
		
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