



catalinbread
MECHANISMS OF MUSIC

Hello and welcome to your new Formula No.55!

The Formula No.55 is our next generation 5E3 Tweed Deluxe-inspired foundation overdrive - we've painstakingly reproduced the preamp section of the classic tweed 5E3 amplifier in exacting detail with the volume and tone circuit replicated part for part just like a vintage 1950s Deluxe. We then expanded upon that classic recipe to widen the playing experience by grafting the 5E3 preamp section to what feels like a MUCH bigger power section at your pick - the effect of which results in feeling like you're playing through a larger cab with more than one speaker. All of the tonal characteristics of a small tweed combo but tuned to have the dynamic response of a big amp - woody and resonant!

In place of tubes, the Formula No.55 utilizes JFETs configured for the most tube-like dynamic response and harmonic content. And just like a vintage 5E3 the volume and tone controls are interactive giving you a wide palette of tones and pick responses to choose from. Since the design goal for Formula No.55 was to offer the widest range of the 5E3 experience as possible from Grant Green cleans to Neil Young Crazy Horse meltdowns (Whizzer not included), the dynamic response needed to be incredibly wide - from a smokey, full-bodied clean jazz vibe to full on raging amp distortion all courtesy of your guitar's volume knob and/or picking hand. A tall order for sure, but one we think we nailed and we hope you do too!

A quick word about the build - to achieve the sonic goal for the Formula No.55, several different types of parts were auditioned in the search for the ideal sound, feel, and dynamic response. We ended up using premium parts here not because we wanted to say we used "premium parts" but because they were critical to achieving the desired result. To that end, the Formula No.55 incorporates all carbon comp resistors and the capacitor types were carefully chosen for their selected positions. Catalinbread pedals have always used this philosophy for design - *we use the right parts for the right sound!*

Okay enough talk - let's fire this baby up!



QUICK START GUIDE

This section will give you a quick overview of your new Formula No.55. 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 Formula No.55 into your pedalboard.

First, let's start by plugging the Formula No.55 into your amp without any other pedals in the chain. While the Formula No.55 works fine with non-true bypass pedals, this will give you the truest feel for what it'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, the controls would read: Volume 2-3, Treble 6, Bass 3, and Mids 6.

OK, got your guitar all tuned up? Let's start by setting the Formula No.55 in

LO/GREEN mode (mode switch in the up position), **PRESENCE** - noon, **TONE** - noon, **VOLUME** - noon, and **MASTER** around 10:00. Go ahead and jam for a while through this setting. You should hear a nice mild cleanish overdrive (you may need to turn up the **VOLUME** control a little more if you're using lower output pickups) with a fatness in the low mids that is inherent to the design regardless of **TONE** setting. Roll the volume control on your guitar back and you should hear the sound clean up really nicely. Now, go ahead and explore the **PRESENCE** and **TONE** controls to hear how they affect the EQing. Okay once you've got those two set to where you like them let's crank up the **VOLUME** control all the way - play a palm-muted chord line and listen to the quality of the grit and the low end resonance that makes it seem like your cab is breathing. Nice, right? Now rip an open chord and let it ring - lots of grind up front that has fullness and clarity as it decays. Notice that 'cab thump' when you palm muted has disappeared and the low end got more focused and tightened up when you hit it hard? Now lay back with your picking hand with the guitar volume up full - IT'S CLEAN! Those are dynamics, my friend. We love them here at Catalinbread!

Okay on to the **HI / RED** mode!

BEFORE YOU PUSH THAT BUTTON let's roll the **VOLUME** control back to about 9:00 - you're basically picking up where **LO / GREEN** mode with the **VOLUME** cranked left off. Notice the signal feels more 'hyped' - hotter, with lots of stored potential at your pick. Hit it hard and let it ring! Now lay back and brush the strings lightly - yep, still dynamic. Take the **VOLUME** up to noon and camp out here for awhile paying attention to the attack and dynamic characteristics - it's fuller but still tight with lots of string definition when you lay into it. And of course it's still cleaning up when you want it. Nice. Now let's do what you've probably already done when you first took it out of the box - dime that **VOLUME** control!

Oh God. Yep. There it is.

Feel that? That elastic 'sag' when you smack it that blooms out bigger than the initial attack? So good. But wait - lay back again and brush those strings - WHOA. Now roll back your guitar volume and get at those tweed cleans. You're probably gonna lose an hour or two here so it seems like a good time to bring this section to a close. Enjoy!

CONTROLS IN DETAIL

The **MASTER** volume control has a heaping helping of output on tap, allowing you to dial in a huge, fat, woody clean tone or to push your amplifier into overdrive all on it's own.

The **PRESENCE** control governs frequencies in the 5khz range allowing you to tune the top end response to your particular pickups and amplifier.

The **TONE** control sounds and behaves just like it does on the actual Deluxe amplifiers - you will notice that as you wind up the **VOLUME** control that the **TONE** control's influence becomes more subtle when the **VOLUME** is maxed out. At lower **VOLUME** settings, you can set it at noon for the flattest response; to the left of noon for those smoky jazz cleans; or crank it up for more barking, greasy upper midrange tones that slice through the mix.

The **VOLUME** control is essentially your gain control. It works in concert with the **HI/LO** switch enabling you to set your maximum desired level of dirt - from squeaky clean to *DAMN THAT'S STANKY!* Want to clean it up? Simply roll back your guitar's volume knob!



The **HI / LO** switch offers two discrete gain modes:

The **HI / RED** mode is the raging, hot-rodged 12AX7 mode with more gain and saturation. You'll notice that your pick essentially turns into a 'throttle' of sorts - lay off the attack and it cleans up but there's always that potential there for 'acceleration' when you lay into it!

The **LO / GREEN** mode is lower gain overall - as if your amp were now sporting 12AY7 preamp tubes. Cleaner and more immediate in the pick attack with more 'bounce' when you're chord comping, but still has that fat, juicy harmonic response.



POWER SUPPLY

You can power your Formula No.55 with a 9v battery or any good quality filtered and regulated 9-18vDC power supply with a center-negative tipped plug designed for use with effects pedals. If you want more volume, headroom, and percussive attack, try running an 18vDC power supply. A 9vDC 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 at 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!

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.

WHERE TO PLACE YOUR FORMULA No.55 IN YOUR CHAIN OF EFFECTS

The Formula No.55 is one of our Foundation Overdrives - pedals that 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. 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 Formula No.55 as intended.

The Formula No.55 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 Formula No.55 as its foundation.

First, we start with the Formula No.55 in **LO/GREEN** mode, with the **VOLUME** 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 Formula No.55. 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 Formula No.55 (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 Formula No.55. It was designed specially to respond like the amp would with those in front of them. In general, the Formula No.55 should be the last dirt or gain pedal in your signal chain. You'll find that using the Formula No.55 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 it as well. Phasers? Probably in front too. Flangers and chorus? Hmmm. 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 Formula No.55:

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 FORMULA No.55

Like the actual amp, the Formula No.55 is responsive to the type of guitar you're playing into it. If you're playing vintage output Fender guitars, the tone will stay cleaner longer as you turn up the VOLUME knob. If you're playing a humbucker or other higher-output style of pickup, the Formula No.55 will break up sooner on the VOLUME knob. But you'll always be able to get cleans by turning your guitar's volume down.

AMPLIFIERS AND THE FORMULA No.55

Generally speaking, the Formula No.55 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 Formula No.55 (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 Formula No.55 will be driving this tube. A cheap or faulty tube can make your pedals 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 Formula No.55 to really fine-tune your tone.

SPECIFICATIONS

True Bypass switching
4.375" (11.11 cm) x 2.375" (6 cm) x 1.875" (4.76 cm)
5mA power draw at 9vDC, 10mA power draw at 18vDC
Input impedance: 1m
Output impedance: 15k
9vDC - 18vDC or Battery Operation

DESIGNER'S NOTES

I've been designing pedals at Catalinbread since around the beginning of the Obama administration and, wow, now it's 2017 and I've certainly learned a lot over my two terms of designing pedal circuits. Just as it is with songwriting or guitar playing, as your skills mature you don't necessarily get more complicated, but rather, your work becomes more refined, more elegant, more essential. So, when I was informed that some of the parts we were using for our first tweed-inspired design, the Formula No. 5, were no longer available and could I approve some substitutions, instead of doing that I jumped at the opportunity to take what I've learned and apply it to the concept of a tweed-inspired Foundation Overdrive. My mantra as I started from scratch with the circuit design was, "I want to be able to go from Grant Green to Neil Young". I wanted to make it even more accurate to the 5E3 preamp design. I wanted it to have a wider clean-to-overdriven range. I wanted it to have more output. I wanted it to feel even better to play. I wanted it to stack even better with other pedals. I dove into the breadboarding process with all this in mind. After two or so months of intensive development, which means sitting in front of a breadboard with a guitar in hand and playing and tweaking the circuit until it SOUNDED right and it FELT right, I emerged with a simple, elegant circuit that has the widest range of clean-to-dirty yet. At Catalinbread, we do everything in-house, so then our hardware development team set out to do the circuit board layout and all of the other details to transform the circuit into the pedal you see on this page. We care too much about the sound and quality to let anyone else have their hands on the process! The production team hand-calibrates each Fn55 to the spec I laid out so you know you'll be getting what I intended. Thanks for considering the Formula No. 55 for your pedalboard. Please check it out and play one for yourself and I hope you will find it as rewarding to play as it was for me to develop.

... Howard Gee

