See Me, Feel Me

As important as tone and build quality are in an instrument, 'feel' is no less critical to the player who's gonna play it, aye, and this is where we must temper our luv fest for the Flaxwoods a bit, understanding that what *we* like isn't necessarily the same for you. Still, we gotta go with our first mind. The composite 25.5" scale neck and 12" radius on the Flaxwoods combined with Elixir .010-.046 strings and medium jumbo frets posed a bit of a challenge for us, since we are usually accustomed to more or less effortless playability from our own personal, more traditional guitars. The neck shape on the Flaxwoods is a shallow, flattish 'C' with ample shoulders and an extremely flat fingerboard radius. Color us 'stuck in the past,' but every time we played these guitars we wished for a slightly deeper, rounder 'C' neck shape with more depth, slightly wider string spacing, and a less flat fingerboard radius. We also found the string tension with the Elixir .010-.046s closer to a typical set of .011s. We'll balance these comments with the observation that the Flaxwood composite neck does an exceptional job of transmitting string vibration to the body of the guitar – in fact, you can merely rub your thumb along the back of the neck and hear the friction amplified through the back of the body.

In terms of appearance, the Flaxwoods we received make no attempt to mimic the look of guitars constructed of solid wood or laminate (solid colors are also available), but they don't look like plastic, either. The appearance of the finished top and back edges surrounding the resonator plate resemble a stone pattern, with random, irregular shaped black areas emerging from solid color beneath a gloss finish. The unfinished, black composite neck feels smoother and less tacky than many modern poly and nitro finishes, and the appearance is black with faint, random mottling. Access to the internal wiring requires removal of the composite resonator panel, which is attached with five screws.

Flaxwood deserves credit for having developed and designed an innovative new technology in guitar building that truly *works* rather than coming off as a mere gimmick. Whether you can personally embrace such technology is not for us to say – a matter of personal preference and your ability to long-jump into the future with a graceful stride... But we're betting the *veikot* at Flaxwood will succeed in the guitar business while finding many more uses for 'flaxwood' in a variety of musical instruments in the future. TQ

ToneQuest subscribers are eligible for an additional 10% discount off already discounted prices on all Flaxwood guitars in stock (and we've only scratched the surface in our reviews) at Guitar Adoptions. Just ask for the ToneQuest discount!

www.guitaradoptions.com, 877-241-4580

Are You Biased?

We wonder if any of you have ever gone on a power tube-buying spree and flush with excitement, simply popped yer new tubes in without rebiasing yer amp... Or do you schlepp it to a tech for re-biasing, perhaps? Well, like setting the intonation on your guitars or changing pickups, there are some things that real men and women should be capable of doing for themselves, and when it comes to safely biasing your amps, you now have no excuse. Enter the Compu-Bias...

Randy Linenberger, founder of Compu-Bias has developed a remarkably simple, compact and accurate tool that will enable any non-technical player to bias their amps using 9-pin or octal tubes, as well as display plate voltage, cathode current and total tube dissipation in watts – all without the need to pull your amp chassis from its cabinet. We asked Randy a few pointed questions about biasing and the Compu-Bias specifically...

TQR: Can you describe your background and experience in electronics and what inspired the development of the Compu-Bias specifically?

I have always loved music. Played trombone for a number of years, even an *electric* trombone... I have been a design engineer for the past 12 years, mainly in the machine automation field. My professional electronics

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and mechanics experience goes back to the late '70s, so that makes it almost 30 years now. As a design engineer, I am always looking for another (better) way to do something. Over the past six or eight years working with Mission Amps here in Colorado doing a number of different projects, I noticed how difficult it was to bias various amplifiers. Most were in a cabinet that made it easy to remove the tubes, but getting the chassis out was usually a real pain. I looked at most of the bias tools on the market and found them lacking in one form or another, So I decided to build a tool to make it easy to do it right.

TQR: For those who don't know, and perhaps those that *think* they know... Please explain why biasing is necessary and desirable, and when it is unnecessary, in language that guitarists can understand.

It's *always* necessary to check tube bias on any amp even if there is no adjustment when tubes are replaced. All tubes are uniquely variable, so idle currents for any specific tube will vary from tube to tube, even in matched sets. Some folks think that you can simply plug in a set of tubes and off you go, but this is simply not true. Unless you have the luck of Jobe, the odds are the tube will not be properly biased and corrective action should be taken – either setting the bias or changing to a tube set that will produce the proper results.

If you don't check the idle bias current, you're taking a big chance, possibly damaging the amp and/or the tubes. At the very least you may not be happy with the sound, and you can shorten tube life.

Without getting too far into the technical details, biasing an amp is very important to both sound and tube life. There are many different ways to actually bias an amp (fixed, adjustable, cathode, etc.), but the end result is to have the output tubes idling at the appropriate point where it can properly reproduce the input signal within the limitations of the amp, and this includes the tubes, transformers and power supply. In a perfect world, the input signal would exactly match the output signal, except that it has been amplified. So where is this appropriate point? It depends. I usually use 75% of the published plate dissipation of a given tube for class AB1 push/pull (most guitar amps with two or more tubes), and *100%* of the advertised plate dissipation for Class A push/pull (two or more tubes). Class A single-ended single tube amps are also typically biased to 100%. Using the above guidelines, it is reasonably

easy to set the bias. I have seen many amps that are running the tubes at far higher than 'safe' values. It is not unusual, for example, to see 14 or 15 watts on each tube in a VOX AC15 when the EL84 tube has a rating of 12 watts. Needless to say, these tubes run hot and suffer a shortened life span. If there is ever a question, ask the amp or tube manufacturer.

TQR: What is the standard method of biasing used by technicians?

Typically techs will set bias by first measuring the plate voltage with a volt meter. Then they will bypass the output transformer with an ammeter to get the current. (By the way this is not an accurate method as the resistance of the plate transformer is in parallel with the ammeter.) If you know the DC resistance and the voltage dropped across the plate transformer windings, you can derive the current using Ohm's law (definition: *the current through a conductor between two points is directly proportional to the potential difference or voltage across the two points, and inversely proportional to the resistance between them)*. Having the voltage and current using Ohm's law, it's a simple matter to calculate the idle current for that tube. This must be done for each output tube. Some amplifiers have a small resistor in the cathode circuit, and the voltage drop across this resistor can be converted into the cathode current using Ohm's law. Obviously, this requires access to the bottom of the chassis. There are some amp builders who add external probes that attach to a meter, allowing you to measure these values without pulling the chassis. Of course, if they have a scope and a signal generator, those too can be used to verify the bias. Each time the bias is changed, the whole process is repeated. As the current goes up, the voltage goes down, so it must be double checked.

TQR: Describe the capabilities of the Compu-bias and how it works – especially compared to similar products that have been introduced in the past.

The Compu-Bias is like no other bias tool. Most if not all bias tools only display volts or amps, but not both and not at the same time or with multiple tubes, Some have switches for each tube, but they still don't show the whole picture. The Compu-Bias goes one step further, displaying wattage dissipated for each tube – the actual value you are trying to set by biasing your amp. As far as I know, no other bias tool provides this.

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Also, all of the voltages that come from the probe to the Compu-Bias are *low level*, with no high voltages going to the meter. This a serious safety issue with other probes. Some of the simple 'probes' actually bring plate voltage out to the ends of the cables that plug into your meter. This is fine as long as they are connected to a meter, but if you disconnect them to say, measure the voltage or current of another tube, you could have high voltage right in your hand. Another issue with simple probes is that it really requires four of them to do the job of the Compu-Bias. I use good quality meters that cost about $200.00. It gets pretty expensive to use cheap probes to do the same job.

TQR: How does the Compu-bias take the guesswork out of the decision-making process in terms of determining the correct or optimal bias for different types of output tubes?

Simple, set the dissipation to the appropriate value and you are good to go. Since the Compu-Bias displays the plate voltage, cathode current and wattage dissipated, you have everything you need to know to set the bias on a typical amp. The readings should be stable and similar for both tubes (if you are measuring two tubes). If you are using output tubes from a different manufacturer, simply set the dissipation to the correct value and you are good to go. If you decide to use another type of rectifier that affects the plate voltage, all you have to do is dial in the dissipation with that tube. If you have more than two output tubes, simply measure the inside pair and then the outside pair. TQ

www.compu-bias.com, 720-963-9342

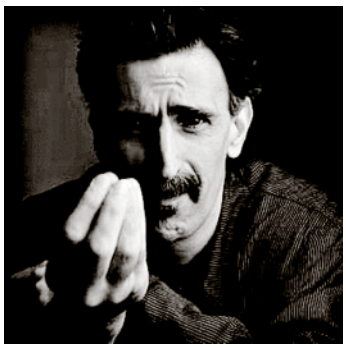
ToneQuest Compu-Bias Review

This may be the shortest review in our history, gang... The Compu-Bias is stupid-proof by design and it does what it's supposed to do without any calculations needed on your part. Unlike other bias tools that require you to break out a calculator and often guide you to biasing your amp way too cold, the Compu-Bias niftily takes you down the righteous path with no risk of bodily harm (although the location of some internal bias pots may require you to pull the chassis), and you can see how closely your precious $400 NOS RCAs are matched, as well as how much power your amp is putting out. We like. Price ranges from $195.00-$246.00. It ain't cheap, but neither were your amps. *Bias forth...* TQ

Nickel Silver vs. Stainless Steel

ToneQuest Bang the Drum

Our Nashville sensei and ever-modest guitar guru Joe Glaser became so weary of fielding questions about the tonal difference between standard nickel silver fret wire and stainless steel that he actually refretted a very well-made imported



Turbo *by Sunlite* GSE150 Stratocaster with alternating courses of high-quality nickel silver and stainless steel fret wire so that we could hopefully settle his hash. We suggested that he alternate nickel silver and stainless every three frets all the way up the neck, and that's what he did – 18% nickel silver .104 x .047 in the first three frets, stainless of identical size in 4-6, .095 nickel silver in 7-9, identical stainless in 10-12, and so on. Now, everybody knows that stainless steel fret wire has a half-life equal to plutonium-239. Stainless eats ordinary wire snips in one fret job and it's harder than a bosun's pecker on R&R in Pattaya. Sounds like the perfect material to end future fret jobs forever, dun't it? Except that some people believe that stainless puts undesirable treble ju-ju on yer tone in ways that threaten to transform your sweet baby into a screaming shrew. Bullshit.

We played Joe's nicely built Sunlite Strat with a wicked fat maple neck and rosewood slab board over several days, systematically comparing single note passages and full chords at specific points along the length of the neck, keenly noting any subtle changes to the tone of all six strings played individually and in chords, *over and over and over again*. The neighbors must have thought we were nuts, and EZ Ryder knocked on the music room door to ask if we were, like, OK? Tell you what...

Divining the difference in sound between two kinds of fret wire is a dorkfest that will leave you craving the hypnotic hum of a cheap Wallmart fan and a fat terry cloth towel soaked in chloroform. After twenty minutes of fret wire testing, you begin to feel like a monkey banging on a drum, or worserer... *Ginger Breaker one-nine... Come on. We got commercial beaver and White Crosses at the Memphis Truck Wash, exit 23, yeahhhh!* Rather do that than test fret wire again. And so would Joe, which

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