GUITAR AMPLIFIER MAGAZINE
Comprehensive new and vintage guitar amplifier information

RANDALL AIKEN INTERVIEW

DOUG: RANDALL, you build some great products, and also write very detailed technical info on your site. Before we go into this, lets start with your background, where you're from etc...?

RANDALL: I'm originally from Greenwood, SC, where I was born in 1960, and I lived there until I went off to college. Since graduating college in 1983, I've lived mainly in the Atlanta, GA area, with short stints in other states. I have a degree in electrical engineering and another in engineering technology, both from Clemson University in SC, and have worked most of my life as an electrical engineer, mainly in design engineering of video and audio products for the television broadcast industry, but also as a manufacturing engineer and as a consulting engineer to a variety of companies in the video, avionics, and medical fields. I have been playing guitar since I was a kid, and currently gig in a classic rock cover band based in Greenwood, SC, doing mainly weekend club jobs.

DOUG: Was there any particular artist whose tone grabbed you, inspired you to play guitar?

RANDALL: My father was a big fan of country music (it was called "country and western" back then!), so I grew up hearing Jim Reeves, Charley Pride, Marty Robbins, and stuff like that. My mother had a bunch of old Elvis, Fats Domino, and Chubby Checker records, so I got into that as well. Of course, I rebelled against that type of music when I got old enough to realize it wasn't "cool" for a teenager. Glen Campbell was probably the first player that made me take notice of the guitar, primarily from watching him on television. What really changed my life, though, was going to a friend's house when I was about 15 and hearing an album by a then relatively unknown band from England called UFO, which featured a guitarist I had never heard of at the time - Michael Schenker. From the first feedback note on the first song on the album I was completely floored. I had never heard anything like that tone! I rushed out and bought my first album - "Force It", by UFO, and then I found "Phenomenon", which were the only two albums they had out at the time featuring Michael Schenker. I wore the grooves off those two albums, trying to learn the licks and phrasing, and spent a lot of time trying to mod my amplifier to sound like that. To this day, no guitar player affects me the way Michael Schenker does, I owe him a great deal of gratitude. The only one who comes close is my second favorite guitarist - Gary Moore. 90% of the time my CD player has something by one of those two artists in it. I knew that I *had* to get a Marshall for that Schenker tone, and eventually got one when I got older and could afford it. That was the start of a long line of Marshall heads and cabinets, including some in purple and orange tolex. I've always loved custom color Marshalls, which is why I offer all custom colors at no extra charge on my amplifiers. I've always joked that you can have any color you want at no charge, but black costs extra!

DOUG: When did you first get interested in electronics?

RANDALL: My first introduction to electronics came when I was around 9 or 10 years old, when my elementary school teacher, Mr. Wright, brought in some Allied kits. Allied was the early Radio Shack, and they sold kits for things like crystal radios, code practice oscillators, and stuff like that. I immediately took to it, and went to the library and checked out all the books I could find on the subject, and basically taught myself the fundamentals of electronics. I would get my mother to take me to the local radio repair parts store to buy parts for the projects I was building at the time. I still have the first RC-28 RCA receiving tube manual I bought at that store when I was a kid!

DOUG: Were vacuum tubes an interest of yours early on, or did that come later?

RANDALL: Yes, because tubes were still around back then. All the local drugstores had tube testers. Our family television set was all tube, as were some of our radios. It was great because the newer "solid state" stuff was coming in and people were throwing out all their old tube TVs and radios when they replaced them, so I would go around on the weekends and scavenge all these tube TV sets off the side of the road and take all the parts out to build my projects.

DOUG: What were the first tube circuits you worked on, and were you building anything?

RANDALL: I built whatever projects I could find plans and parts for at the time. There was a great book called "The Boy's First Book of Radio and Electronics" by Alfred Morgan. It was basically an introductory course on electronics, and had lots of projects for amplifiers and radios. I also got started in ham radio, so I was building transmitters, receivers, and power supplies. The ARRL handbook, which is the "bible" of ham radio, had a wealth of information on electronics theory and construction practices. I developed an interest in guitar around the same time as I started in electronics, and eventually talked my parents into getting me an electric guitar and amplifier. It was a little Harmony tube amp and a cheesy little Harmony guitar that was sort of vaguely reminiscent of a strat. Of course, I immediately took the amp apart! Later, when I was in high school, I got my first "real" guitar and amp - a 65 SG Junior, which I paid $80 for, and a Fender Bassman 50 head and matching 2x15 cabinet, which turned out to be quite a nice amp for guitar after a few mods.

DOUG: What kind of mods did you do to it?

RANDALL: You name it, I tried it! It started with a master volume and grew from there. The goal, of course, was to get it to sound like the Marshall tones I heard on the UFO albums, but at lower volumes.

DOUG: Did you start Aiken amplifiers as a "plan", or did the amp company just evolve into what it is now?

RANDALL: When I was in college, I made money by doing amp mods and repairs for all the local musicians and bands that would come through town. I always planned on starting an amp company after college, but I figured it would be best if I did it as a sideline to start, so I got a "real" job as an engineer to pay the bills. The side benefit, of course, is that I would get lots of on-the-job training in all the various disciplines I would need to design amps, such as mechanical engineering, manufacturing engineering, technical writing, etc. Unfortunately, as often happens, life got in the way, and my dream of starting an amp company kept getting put on the back burner. I finally bit the bullet and started my company officially in 1999, and showed my first amp at the 2000 summer NAMM show, and have been at it ever since. We have a small office/warehouse space in Buford, GA, and are slowly growing and expanding our dealer network.

DOUG: What were your first models, features, and tones?

RANDALL: The first model I did was the Invader 18W combo. I have always gigged with Marshall non-master amps, using attenuators to tame the volume. I have a '72 50W head an 4x12 checkerboard cab that had been my main gigging amp for quite a few years. I thought it would be cool to do a low-power version of that amp so I wouldn't have to use the attenuator, and I didn't want to carry around the 4x12, so I designed an amp that was essentially the front end of that amp coupled to a 2-EL84 power section, running fixed-bias class AB1 with global negative feedback, so it would respond and sound nearly identically to my favorite Marshall. I decided to do it in a combo format so it would fit the front seat of my little Toyota MR-2, so that set the dimensions of the cabinet. That design turned out to be just the ticket for the tone I was looking for, but it was still too loud for practicing and smaller gigs, so I added a built-in attenuator of my own design. While I was at it, I also added a three-knob reverb and a speaker-emulating XLR line out, figuring that anything worth doing, is worth overdoing! This amp eventually became my first production model amplifier, the Invader MKI. It was built on a white powder-coated aluminum chassis, and was available as either a head, a 1x12 combo, or a 2x10 combo. I also made a 4-EL84 30W version of the amplifier.

DOUG: Are any of these still available, and did any of them get turned into models you currently build?

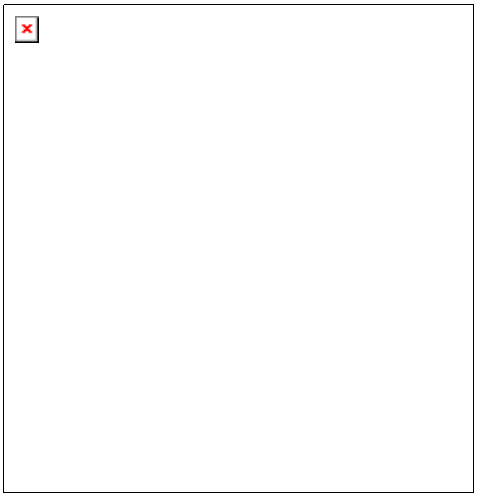
RANDALL: No, that particular amplifier is no longer available, but I do currently make the Invader MKII, which is a cosmetically redesigned version of the amp, featuring gold anodized panels, a redesigned attenuator for even more transparent attenuation, with a "variable" knob that takes it down to bedroom levels, a two-knob reverb (dwell and level - the tone knob had to go to make room for the variable attenuator knob). The XLR line out feature was dropped. The amp features rear panel bias test jacks and a locking bias adjust pot so you don't have to remove the chassis to rebias, and I added a voltage selector switch to allow operation at 100V/120V/200V/220V/230V/240V at 50/60 Hz, for international use. There is also a 30W model available, but it uses two EL34 tubes instead of the 4-EL84 tubes the MKI 30W amp used.

DOUG: With the current tube situation being what it is, we're always trying different things to hopefully find "the tone", and reliability. What has been your experience with modern tubes, and what are you using in your product line?

RANDALL: The biggest problem is finding tubes that are low enough in microphonics to be usable in early gain stages. The tube with the best yield for microphonics is the JJ/Tesla ECC83S. Nothing else comes close, primarily because it has the shortest plate structure of any current-manufacture tube. I used to use

these exclusively, but I switched over to the newer revision Chinese 12AX7s, because the JJ's have a problem with early grid conduction. If you put a scope probe on both the grid and cathode of the tube, and apply a signal, you would normally expect the grid to clip at a point very near the DC voltage level of the cathode. The JJ's, however, clip several hundred millivolts lower than the cathode potential, which means they compress far more and clip earlier, resulting in lower headroom and a less "detailed" sound. They are particularly bad in the second preamp location of a Marshall style preamp. The Chinese tubes clip normally at the grid, and have a much more open, detailed tone with good gain. Their plate structure, while not as short as the JJ/Tesla tubes, is shorter than other tubes like the Sovtek 12AX7LPS, 12AX7EH, and the EI 12AX7, so they have fairly good yield for microphonics. In addition, they don't suffer from the low cathode-to-heater voltage rating that plagues the 12AX7LPS, which causes them to fail early in DC-coupled cathode follower stages that have high cathode voltages, so overall, they are a good all-around tube that has good enough yield to work well in a manufacturing environment. I try to stay away from NOS tubes, because I don't want to use anything that I can't buy in quantity. I do sometimes use NOS Jan/Philips 12AT7s, which are fairly plentiful. For EL84 power tubes, I exclusively use the JJ/Tesla, which are the most robust and high-yield tubes I have found. I usually don't have to throw any of them out, and they are close enough in characteristics that I can match up pairs for nearly all in a batch of a hundred tubes. For EL34's, I like the SED or "Winged C" tubes (formerly called Svetlana, but that name is now being used on other Russian tubes). Current production rectifier tubes are generally all bad - I quit using 5AR4s because of too many field failures in the currently available ones, particularly the Chinese. I use solid-state rectification now for reliability, primarily high-current fast-recovery diodes (FREDs), because of their lower switching noise when compared to standard rectifiers.

DOUG: What's in your current product line now, and tell us about the differences between models?



RANDALL: We are currently producing the 18W and 30W Invader, and an 18W and 30W Intruder, which is a small-box version of the Invader, except that it has an extremely transparent post-phase inverter master volume (the output stage is frequency compensated so it doesn't get buzzy and thin at low volumes) and an effects loop instead of the attenuator and reverb. We are also producing the Tomcat, which is a 12W class A, cathode-biased non-negative feedback 2-EL84 amp, featuring volume, tone, and cut knobs, as well as our built-in attenuator. It sounds sort of like a combination of an old Marshall 18W and a Vox, and has a rather unusual circuit that uses a 12AT7 for the first preamp stage. It also has a footswitchable boost circuit to kick up the gain for leads. It is probably our most popular amp, and comes in a very cute small box head, or a small 1x12 combo. We also build the Sabre, which is a 50W channel-switcher. It was designed to give blackface Fender tones on the clean channel and high-gain modded Marshall tones (without being overly compressed or buzzy) on the gain channel. The gain channel has a footswitchable boost for crunch/lead operation. There is also a separate effects loop for each channel. In addition to amplifiers, we also make 1x12, 2x12, and 4x12 cabinets. Our 1x12 and 2x12 cabinets feature a three-piece rear panel, so you can use them either closed-back or open-back.

DOUG: The three piece back panel is very interesting. I'm sure our readers will want to know, how to you make the adjustment between panels, and the effect by removing them?

RANDALL: Nothing high-tech, it is just a three-piece back with screws around all three panels. To remove the center panel, you just take all the screws out and pull the panel off. A closed back cabinet has a tighter low end and smooth midrange, while an open-back cabinet has more of a midrangey tone, but the back wave helps the sound disperse better on stage, so you can usually hear yourself better without playing as loud.

DOUG: Are there any new products in the works or prototypes?

RANDALL: Of course! I am always working on new designs. The next amplifier to be released will be the Corsair, which is a small-box high-gain 50W 2-EL34 amp. It is basically the gain channel of the Sabre, with footswitchable gain boost and effects loop, and bass, mid, treble, presence, and depth tone controls. I am finishing up the prototype right now. It is going to be a real barn-burner in a nice small box! I have two other models that will be released after the Corsair, the Europa and Aurora, and I also plan to offer a stand-alone attenuator, called the "Afterburner", as soon as I get these next amps into production. Right now, our biggest problem is not being able to keep up with production demands, so we are looking at ways to streamline the process, and we plan to hire a few more employees very soon to help speed things up.

DOUG: Can you tell us more about the "Afterburner", and how it differs from the other attenuators on the market?

RANDALL: Not really, the details aren't ironed out yet. It will be a completely original design, and, of course, like the attenuators built into my amplifiers, it will be designed to properly match 4, 8, and 16 ohm loads.

DOUG: RANDALL, thank you for taking the time for this. Anything you want to say to your customers?

RANDALL: Just a heartfelt thanks! Especially to those early guys who took a chance on me as an unknown builder. Oh, and remember - red and purple tolex sound best!