

The AA864 Bassman vs. the AB165 Bassman

Fender had two versions of the blackface Bassman head, the short lived AA864 and the AB165. There is also the 6G6-B model which has a "blackface" but is really "brown" or "white" in the nature of the circuit (had a presence control), and had white barrel knobs so it is really not a part of the "blackface" family. I'll also discuss why I think the AB165 is not worthy of being in the same family as other blackface amps.

First, the AA864. This amp looks like a blackface iteration of the circuits that came before. It has the standard blackface power amp section, with the standard feedback loop. The normal channel looks and sounds like the normal channel on other blackface amps (relatively speaking). The bass channel adds a gain stage and a different sort of tone stack which is similar to what Fender did with the 6G6, 6G6-A, and 6G6-B versions of the bassman head.

The AB165 looks like nothing Fender ever did before, and indeed is a prelude to some of the idiocy that occurred in the later silverface era (tonewise of course).

Power amp - The power amp has some very strange things added for a Fender. For instance, there are 220k feedback resistors from the plates of the power tubes back to the grids of the power tubes. The blocking caps between the plates of the phase inverter and the grids of the power tubes are now .022 instead of the normal Fender .1. The feedback loop now gets connected to the other side of the phase inverter via a .1 cap. This cap limits the frequency spectrum of the feedback (this may be something you want to experiment with in a project amp, NOT a valuable blackface amp!). Why doesn't the amp go into positive feedback runaway you tech heads ask? They reversed the leads on the secondary of the output transformer to reverse the reference of the feedback. The coupling cap to the phase inverter is a .1, which is far larger than most anything that we saw before from a Fender amp. They probably did this in tandem with the aforementioned .022 caps later in the circuit to limit the bass content. In earlier years, Fender did the opposite thing and used a smaller coupling cap to the phase inverter (like a .001 or a 500pf in the case of the AA864) and used the larger blocking caps later on.

Pre amp - The preamp on the AB165 does look fairly similar to the AA864 but does differ in a few key ways. The normal channel, which looks pretty much the same as before, is now connected to the circuit before the third gain stage. The third gain stage now has a 470k interstage feedback resistor that makes this tube work like both a compressor and distortion stage (even though that's not what Fender intended, but they didn't think we'd turn it up that loud anyway...). This is actually a cool thing, and is a good way to get a nice singing amp tone. Fender did add some caps across the 100k plate load resistors, which is not a good thing for tone. These caps send some of the high frequencies to ground, which doesn't help tone any. One of these caps is a 500pf, the other is a .01.

Power supply - Fender did add some filtering to the AB165 power supply, which is a good thing. It probably helps tighten up the tone and reduce the possibility of motorboating (like some tweeds did). The schematic calls for an 8uf-450v cap at the end, but I've always seen a 16uf-450v cap there.

Bias supply - Fender really screwed the pooch on this one. They set one tube up as standard non-adjustable fixed bias and then you adjust the other one to match the fixed one with the pot. Seems like a good idea right? Wrong. These amps almost always hum when they are adjusted so each tube draws the same amount of current. I don't know why, maybe an engineer can explain it to me. So when you adjust the pot to make the hum go away, the tubes are not idling the same and you get nasty distortion when you turn it up.

Modding the AB165 to sound better via some ideas from the AA864 amp.

I don't consider the AB165 Bassman a proper blackface amp because of the nuttiness that is going on with the circuit. Sure, from the outside it looks like a standard blackface amp, but the changes to the circuit don't make a whole lot of sense when it comes to decent guitar tone. These amps never were much good for bass, so I won't even try to consider what the tonal difference between the AA864 and AB165 for bass because it's practically a moot point. So back to guitar tone. The AA864 has more of a blackface tone, but doesn't provide too much excitement. The AB165 has that extra compression/gain stage.... Hmmm.... Not too hard to figure out this one is it? Mod the AB165 halfway back to AA864 specs for better tone!

What to do to the AB165 to make it sound better.

Pre amp - Take out the 500pf and .01 caps across the 100k plate load resistors. That will open up the high end. There's nothing else to do until you get to the phase inverter!

Power amp - Change the coupling cap to the phase inverter to a .001. Make the feedback loop look like the AA864 by using an 820 ohm resistor and connecting it to the high side of a 100 ohm resistor like a standard blackface amp has. Change the .022 caps to .1. I actually use .047's here because I think it tightens up the bass a little bit. Don't forget to reverse the speaker side of the output transformer by connecting the green to positive and the black to ground.

Bias supply - Make it look like any other blackface amp. I normally use a 50uf-50v filter cap, but anything higher than that up to about 100uf is fine. Use 220k grid resistors instead of the 100k's that may have come later on some AB165's..

Power supply - Change all the electrolytics with original values. The extra 16uf in the power supply of the AB165 (but labeled as an 8uf on the schematic) is a welcome addition and should stay. It would be a good idea to change the carbon comp resistors under the cap pan with some metal oxide or metal film ones to reduce noise and popping (or the chance of having it happen later on).

Some notes: This mod takes a bit of creative thinking to get the layout to work. Fender had a nutty looking layout with the AB165. Some of the eyelets that you think you want to use could be grounded from underneath by a hidden wire. Look at the schematics and layouts so you can figure out what you are going to do. I'd draw it out, but I don't remember exactly how I do it. It only takes a minute or two of thinking to figure it out, but you do have to look at it a bit.

That's it. Now you have an AA864/AB165 hybrid that sounds better than either. The amp compresses and distorts great, but you still get a good clean tone. **Please resist the temptation to be a jerk and do this to an AA864 model amp.** Those amps are rare, and I think most of them were built in late '64 which makes them Leo era amps. Don't mess with them! You can usually find any blackface (AB165) or silverface Bassman head for fairly cheap to do this to. **AA864 heads are off limits for modding** as far as I'm concerned.

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