

DR (and SR) mods by BAL Version: 2001-08-11

After reading posts mainly by Trace, Bruce C, Carl Z, Steve A and Jim S and after trying several mods (and several values on each mod!) this is how the -65 BF DR (AB 763) looks now. The changes were done one after the other, not all at once. I guess I “grew into” these changes over a period of two years. I’m primarily looking for a Freddie King sound, I love his tone (and BB’s and maybe also the early EC – but that was Marshall...). I’m mostly playing a PRS SC and a -81 MIJ Strat (-62 RI) with replaced PU’s (Lundgren RI -62) plus the Gorge L-Cable.

The amp now has more volume and punch, more headroom, probably less distortion (than 6V6) but a very nice 6L6 distortion, much less farting with a nice low-end response and a very nice high end - without harshness or oscillation, probably more midrange as well. Some of the changes made on this amp were made on my SR as well. Although I can judge what tonal differences each mod does I do not pretend to have even a basic electronic understanding of what I have done :-).

Mods

1. The DR now carries 2 Svetlana 6L6, biased to approx. 36 mA (1 ohm method), instead of the 6V6 pair. (I also use the original RCA 6V6 from time to time). PI tube was changed to 12AX7 (12AT7 is nice too).
2. The cathodes were separated in V1 and V2.
3. The “G [G for Guru] Weber Reverb Trick” was performed (2nd book, page 39).
4. The filter section was changed to SR specs. The “Torres diode trick” was performed by the 1K resistor (Torres Book).
5. A 250 pF SM was added across the PI plates and the grid stoppers on the 6L6’s were changed to 2K2.
6. The coupling cap by the PI was changed from 0.001 uF to 0.022 uF.
7. The NF resistors were changed to 2K2 and 100 R (220R in the SR). The grounded (47R) 100R resistor (NFB) was bypassed with a 1uF cap (a “presence” arrangement).
8. The tone stack was changed to 2 x 0.022 uF (middle, bass, OD’s or old blue subs) and 250 pF (treble cap, SM) in both channels.
9. The 47 pF bright cap was disconnected and a 1M audio push/pull pot (Volume) was installed, dialling in or out the presence arrangement by the NF circuit. The same arrangement was performed in the SR with the bright switch.
10. The speaker (Oxford) really sucked and 2 old CTS 10’ was installed in a new baffle (at 4 ohm). (The old baffle and speaker is in a safe place).
11. To reduce flatulence the CBC in the first gain stage (V2) was changed from 22 uF to 2.2 uF (the resistor changed from 1500R to 1K) and in the second gain stage to 10 uF, with a very nice result. This was done on both channels.
12. To reduce further reduce flatulence the coupling caps from the driver tube were changed from 0.1 to 0.047uF.
13. The Intensity pot was replaced with a 50K ON/OFF pot (mostly in OFF position) disconnecting the vibrato.
14. All caps are OD’s (715P) and SM’s and all electrolytes were replaced (Sprague’s).
15. The middle cap (of three) in the vibrato LFO section was increased from 0.01 uF to 0.02 uF.
16. The bias feed cap was changed to 100 uF from 25uF and a new resistor was installed (5W).
17. The 470 ohm screen resistors were changed to 1K, 5W (6L6’s).

18. A shielded cable was installed from the “hot” input lead (Norm/Rev channel), V1 and V2 respectively. Another shield from pin 7 (V1, V2) to the volume pots. The grid wire of V4 (to the junction of dry/reverb mix with a 3M3 and 470K resistor network) was also replaced by a shielded wire.
19. A solid state rectifier was installed in the DR. The diodes are FRED’s (Fast Recovery Epitaxial Diode -> 11A, 1200V) and a 0.1 uF cap (ceramic disc, 1000 V) added in parallel with the FRED’s (not in the SR which carries a Mullard GZ34).

Comments

- 1, 2 The tonal changes are obvious. The PT seems to be able to handle this change OK. I initially installed a preamp filament supply transformer (6.3 V, 2 A) because I thought the PT was running hot. However, this did not affect the heat problem. A small fan was installed instead to cool things down. The added heat probably came from the 6L6 tubes and the rectifier (GZ34).
3. The “Reverb Trick” really is a VERY cool mod.
4. This was done in order to increase voltage and headroom in the preamp section (I hope that I’m right about this ;-). Ad the “Torres tone trick”: Not much of a change, maybe a bit faster response.
5. These prophylactic changes were done to in order reduce PO (I don’t have an O-scope). I also tried a 500 pF but I believe that this value stole some of the sparkles.
6. This little cap really affects the tone.
7. This ads a bit more gain (without NFB mud) and presence and highs, very nice.
8. This ads a bit more balance to the sound but maybe ads a bit fart as well?
9. The stock 47 (or SR 120 pF) makes the amp too trebly. The “presence” is mostly in the ON position.
10. This OT/speaker (8 to 4 ohm) mismatch really made a BIG tonal difference – it did “open up” the amp and I believe increased wattage as well.
11. These changes cut the bass response and flatulence, when driving the amp hard, without affecting the amp tone. Very good mod. The 1K resistor gave a bit more gain than the 1K5.
12. This mod really increases gain and improves tone.
14. Changing the big non-electrolytes to OD’s made a definitive difference for the better. Exchanging the small ceramic ones to SM’s didn’t affect the sound very much (maybe a few more sparkles?).
15. This was done in order to slow down vibrato speed (from 3 Hz to 1.5 Hz).
18. This “mod” did quite down the amp a quite a bit...
19. The SS rectifier did increase headroom, it also gave a faster response and a very nice tightening of the bass response – I really liked this mod in the DR. The added 0.01uf cap in parallel with the FRED’s took the slight harsh edge off. The SR became to clean for my taste and sounded better with the Mullard GZ34.

Mods tried but not performed

I messed around with the slope resistor but found that the original value sounded the best (V2). However, when playing a Strat maybe a decrease in the value sounds better?

I also played with the little 10 pF cap, which is a very interesting cap. I think I'm not finished with this one...

I reduced the value of the 68K resistors by the inputs by half and then removed them all together, but did not like the tone so I settled for stock values (too much mud).

The 220K grid leak resistors by the driver were replaced with 120K. The bass response was reduced and the treble did get more room. I also believe that the head room decreased, and the tone control of the guitar responded differently – the last 2 mm gave the “it all”. It was pretty dull mod with a lack of headroom.

I did try a Weber VST P12BT at 4 ohm. This is probably a very good speaker, but I liked the 2 x 10' (CTS ceramics from 1965) better.

Increasing the resistors in the NFB and bypassed it with a 1uF cap cured a lot of the ugly muddy sounds.

I tested several different values in the tone stack as well as fiddling with CBC-elyts and the PI cap.

Maybe the 2 x 0.022 uF in the tone stack adds a bit farting but the balance is better, I think.

Reducing the CBS's below 2 uF seems to thin the sound out.

I have not tested to further reduce the coupling caps from the driver tube below 0.047uF, maybe that is an other way.

Surprisingly, a larger PI cap value (0.022) seems to “remove a blanket” from the amp. Of course there are more mids and some more bass as well, but not disturbingly so. The amp does sound fuller but also clearer. I have not tested this above 5 in volume yet (my family do not understand why I have to play so damned loud late at night).

The 47 pF bright cap was lifted with a with a 1M audio push/pull pot (Volume) In the SR the 120 pF was changed to a 47 pF cap (bright switch). This arrangement was later disconnected in favour for the presence control.

For the purists

All original parts were stored, no new holes were drilled. The amp is possible to restore to stock specs with original parts and tubes. The amp looks dead stock.

PT DR AB763

Pin 6 Red: 340 V (Schem 330 V)

Pin 4 Red: 338 V (Schem 330 V)

PT SR AB763

Pin 6 Red: 380 V (Schem 360 V)

Pin 4 Red: 383 V (Schem 360 V)

Model	Rectifier	Power Tubes	BIAS	Power Tubes Plate Voltages Pin 3 R/L	PI Plate Volt. Pin 6	PI Pin 1	V 2 Pin 6	V 2 Pin 1	V 1 Pin 6	V 1 Pin 1
DR AB763	Schematic GZ34	6V6	?	415 / 415	180	170	170	170	180	180
Mod	GZ34	6V6	27 mA	425 / 426	282	296	255	227	257	258
-,-	SS	6V6	27 mA	440 / 439	292	306	263	234	265	266
-,-	GZ34	6L6	36 mA	417 / 417	280	290	250	222	252	253
-,-	SS	6L6	36 mA	432 / 433	290	300	260	232	263	265
SR AB763	Schematic GZ34	6L6	?	460 / 460	230	230	270	270	270	270
Mod	GZ34	6L6	36 mA	495 / 497	278	280	300	270	332	316
-,-	SS	6L6	36 mA	507 / 507	284	287	307	277	325	338
Model	Rectifier	Power Tubes	BIAS	Power Tubes Plate Voltages	PI Pin 6	PI Pin 1	V 2 Pin 6	V 2 Pin 1	V 1 Pin 6	V 1 Pin 1