





Below are some simple mods if you keep the choke circuit. The fuse in series with the Surge resistor is 2 amp fast blow ceramic that has an arc "quenching" powder in it to prevent what Carl described.

I did some further analysis on LT Spice and as you can see on the first page of the attachment, the choke's resistance causes the grid bias to increase as grid current goes up, such as on SSB peaks.

Supposedly, this simple feedback system reduces IMD by a few percent, but certainly not noticeable on the Ham Bands.

The story goes that an engineer from Collins mentioned this system to a Heath engineer and Heath adapted it. I retired from Collins last year and spoke to some other "well seasoned" and retired engineers who worked with Arthur Collins and Bruene and no one can verify that story. Bruene was the chief SSB engineer at Collins radio, BTW and was the person who did the original design work on HP linear amplifiers.

I suspect that since post war parts were in good supply Heath decided on this circuit to avoid any patent infringements, otherwise they would have to pay royalties to Collins.

Anyway, on the second page, I replaced the chokes with 22 ohm, 2 Watt Thick Film resistors and the biases are still pretty close. So if chokes ever get into short supply, then this could be an option.

As you can see, with a 5.1 volt zener as Heath currently has, the total bias get very close to 1 volt at times. In my view, this is too low a total bias.

Bias Zeners: Contrary to what was posted, 7.5 Volt to 15 Volt 10 Watt zeners are the norm for SSB and AM operation. In fact, Eimac at one time stated that biases up to 15 volts would be appropriate for 3-500Z's in cathode driven linears.

In my Henry 2K-4 amp using the same type of circuitry, I use a 1 amp slow blow fuse in series with a 10 volt, 10 Watt Zener to bias the cathodes. This allows lower idle current for the plates.