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Subject: Ah, the Compact! (um, long)

Posted by [Poindexter](#) on Sun, 03 Oct 2004 17:32:17 GMT

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Probably Eric will check in here on this, he likes PP amps too, but I think guys are being a bit too kind to this amp, fidelity-wise. A singly-driven diff-amp (which is what the output stage of this amp is) relies for symmetry of drive on very good coupling of the cathodes, since the 'off' tube is a grounded grid amp, and receives its signal at the cathode. Usually you'll see them used as a second stage (direct coupled) where their cathodes are elevated a hundred volts or two, or connected at the cathodes (if the input is at ground level, like a first stage) to a large value negative supply; and the cathodes common-connected with a large value resistor. This is the 'long tail' of the long-tailed pair. An alternative is to use a smaller negative voltage on the common cathodes, and a current source (sink, actually). The thing is, all these solutions are prohibitively difficult to implement if you're drawing ~60mA in the stage, if you're trying to keep the circuit simple and inexpensive. So, how is this problem addressed in the Compact? It isn't.

resistor is common to all four tubes in the stereo amp), and to hell with it. Really to hell with it,

channel. What happens is that voltage drive to the 'off' (grounded grid) tube is substantially less than that to the grid-driven tube. I think that what these guys are counting on is that the O T balances out the voltage drive, giving a symmetrical output in voltage. The shape of the signal, though, is not going to be symmetrical; since the grounded grid tube is amplifying a reduced amplitude signal, its output is flattened in shape, giving an indeterminate (but calculable) amount of second-harmonic distortion to the contour of the output waveform. Some guys like this sound, if the second harmonic distortion is in the correct polarity (flattening on the negative-going side of the output waveform); after all, a single-ended amp may be regarded as a PP amp with 100% asymmetric drive, but I think this amp is going to have quite a lot of it. It will sound very 'tubey'. The circuit as shown will also only have a gain of about 7 (plate to plate) in the driver stage, and so the amp will only marginally be drivable directly with a line-level source as they claim, I think. I go to the trouble of splitting in the driver stage, where a good-value negative supply (and long tail) is not a lot of trouble, and giving balanced drive to the outputs. This amp uses 6V6's as outputs, which are harder to drive than EL84's, and is easily drivable from a line source; that's the idea, it's a direct-input amp. I would much like to try building the circuit shown with EL84's; max power would be a little down, but dynamics and clarity might be better. Did I explain that okay? Poinz