
Subject: Strange old amp

Posted by [Manualblock](#) on Sun, 03 Oct 2004 13:00:16 GMT

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Poking around the net and I found a group of guys building this amp modeled on an old topology from the 50's that seems a little odd. These people say the amp sounds fantastic with great bass and very smooth. The amp goes by the name Compact and the schematic can be found on Triodeals website. It is a push pull EL 84 tube rectified with a single tube driver stage. The amp has no phase inverter, the output tubes act as their own phase inverters. Only one of the output tubes provides power so only 11 volts are required to drive the output stage. Any line level source will drive the amp to respectable levels with a single driver tube in the input stage. The cathode resistor provides local feedback and does not use a by-pass cap. Total of 3 tubes plus rec. tube and a total of 11 passive parts. Power trans and output trans and a choke and you are done. I found it interesting and should be super cheap to build and very simple to boot. Total output about 6 watts.

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

Subject: Re: Ah, the Compact! (um, long)
Posted by [Wayne Parham](#) on Sun, 03 Oct 2004 18:04:37 GMT
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Great write-up, makes sense. Thanks!

Subject: Re: Ah, the Compact! (um, long)
Posted by [Manualblock](#) on Sun, 03 Oct 2004 18:39:15 GMT
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Actually that was a great job. Since Garman asked for "tubey", I thought that might do it. Your explanation was excellent, please do not hesitate to chime in, we need this level of expertise. Thanks J.R. The schematic you show, is that a solution you use for this circuit?

Subject: Solutions.
Posted by [Poindexter](#) on Sun, 03 Oct 2004 21:02:17 GMT
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No, actually I drew this circuit up long before I heard of the Compact, maybe ten years ago. What this actually is is the circuit of my EL34 Williamsclone, the first power amp I drew myself, without the front end amplifier. I thought at the time that simplifying the circuit by one stage would aid the clarity, transparency of the amp. It's not quite that simple, as Meta can tell you, but I still like this amp a lot, as do a few people who've bought one. All this stuff can be found at: <http://www.AudioTropic.net> I'll be revising the site substantially in the next few days, so if you go over there right now, stop back in a week or so. Thanks for the strokes, my vanity loves you. Poinz

Subject: Thanks, Wayne,
Posted by [Poindexter](#) on Sun, 03 Oct 2004 21:09:19 GMT

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Yer a jennamin.Poinz

Subject: Re: Solutions.
Posted by [Manualblock](#) on Sun, 03 Oct 2004 21:14:06 GMT
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No; I Thank you!Knowledge is it's own reward, or something like that.Will certainly visit your site, see you over there, J.R.

Subject: Re: Solutions.
Posted by [Wayne Parham](#) on Mon, 04 Oct 2004 04:55:44 GMT
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Great site, Poinz!
AudioTropic.net

Subject: Re: Solutions.
Posted by [Poindexter](#) on Mon, 04 Oct 2004 14:25:06 GMT
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It's just about to get better. New sections, etc. I'm working like a maniac on it right now.Thanks again,Poinz

Subject: Re: Love the dissolve! nt
Posted by [BillEpstein](#) on Mon, 04 Oct 2004 20:30:52 GMT
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Subject: Re: Love the dissolve! nt
Posted by [Poindexter](#) on Mon, 04 Oct 2004 20:49:51 GMT
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Yeah, I gotta remember to put that in the new homepage. Thanks for the reminder, Poinz

Subject: Re: Ah, the Compact! (um, long)
Posted by [metasonix](#) on Thu, 07 Oct 2004 03:21:43 GMT
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>Probably Eric will check in here on this if you wish, but you did a good analysis. It's a crude differential stage. Nothing new or revolutionary there. I even saw this done with the output tubes once. You name it, somebody's tried it, and yet people keep coming back to Williamson or split-load circuits....

Subject: Trying everything.
Posted by [Poindexter](#) on Thu, 07 Oct 2004 06:10:48 GMT
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Hi, Eric,> I even saw this done with the output tubes once. Yeah, that's exactly what they do with the Compact. High resistances everywhere, tubes operated practically down in cutoff, volume control in front of the output, ungrounded OT secondary, it's a truly quirky critter. I really do think the builders are being a little too kind to this circuit. Regards, Poinz
