AIR *your* VIEWS

Sir;

In Electronics and Beyond issues 141 and 149 you had articles by Mike Holmes on valve power amplifiers, these incorporated "Current Generators". Would it be possible to obtain the information on how to calculate the values to enable them to work at different currents, I would appreciate any information you have on these interesting circuits.

Regards Peter Rush

Mike Holmes replies:

Hello Peter;

Basically this is nothing more mysterious than Ohm's law. If the Vbe (voltage drop across base-emitter junction) of the low power transistor that controls the base of the main transistor is 0.7V (approximately!), then you only divide this by the current you want.

In other words: 0.7 / I = ohms, where I is in amperes. E.g. if you wanted 88mA, it would be 0.7 / 0.088 = 7.95 ohms. This is a non-standard value of course so you will need to make up this resistance by combining resistors in series and/or parallel.

Finding the values for resistors to be put in parallel can be done with reciprocal calculations, i.e. the nearest standard value for the above is 8.2 ohm, & this can be used if another resistor is put in parallel with it. The reciprocal of 8.2 is: 1 / 8.2 = 0.122 (rounded). The final value required being 1 / 7.95 = 0.1258 (rounded), Subtracting 0.122 from this gives 0.0038; the reciprocal of which is 1 / 0.0038 = 263 ohms, so you could use the nearest standard resistor value of 270 ohms, i.e. 8.2 & 270 in parallel. (Or alternatively, 2 x 3.9 ohms in series!)

Incidentally I have since upgraded this biasing method to use instead a L7812 CP 12V constant voltage regulator chip (diagram below). The principle for determining the current flow by resistance is exactly the same, the only difference being that the constant voltage is here 12V instead of 0.7V. This drawing is from my web page **http://www.mc-h.demon.co.uk/kt88bias2.html**