Subject: Compensation cable assemblies - R1, R2 and C1
Posted by Wayne Parham on Fri, 01 Aug 2003 04:26:42 GMT
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The C1 capacitor does its thing above 4kHz, and is most noticable in the top octave above 8kHz. The values of R1 and R2 are what set the level in the vocal overtone region, from 1kHz to 4kHz. So to me, the system sounds more shrill when the attenuation from R1/R2 is reduced, which raises the overtones. Using a larger C1 capacitor lowers the frequency where augmentation begins, and if it is made large enough, it effectively removes any attenuation. This too would increase overtones, which can sound shrill if excessive. Another thing to consider is the value of R2 sets the damping of the high-pass filter, which manifests itself in the response near the crossover frequency. This means that certain values can overdamp or underdamp, and you can really make a big peak in the 1kHz to 2kHz area with certain combinations. That tends to make a sound that is nasal or shrill.When the top octave is over-augmented, I would describe the sound as sizzly or bright. Sounds like you're frying bacon with some material and cymbols take on a loud "kuush" that feels like a pin driven through your eardrum. That's what sometimes happens on horn tweeters that already have a pretty bright top octave, when they are used with aggressive compensation. If you have to attenuate over 12dB, then it might be good to use a smaller value of bypass capacitor. This is particularly true when using a bright tweeter like the PSD2002 on a horn like the Altec 811, which is a combination that already generates a lot of on-axis energy in the top octave.If you feel the ladies are a little harsh, then you may actually have too much in the midrange overtone region, from 1kHz to 4kHz or so. That would tend to favor a solution having more attenuation from R1/R2 and a bypass capacitor C1 that allows more energy in the top octave to compensate. On the other hand, if you go too far in this direction - having too much top-octave compensation - then vocals will not sound shrill but the high-hat will be pretty hot.A neat thing you might do is to make a handful of different cable assemblies with different values of R1, R2 and C1. Having several pairs of pre-built tweeter cables ready to go makes swapping out different drivers and horns relatively painless - You can easily compensate for their differences and make changes right on the spot. Maybe go through the charts and make some of the standard cable assemblies, and that will make configuration changes easy.I think I'd start with the standard cables (from the charts) if I were you, because I took some time to make sure they were optimally damped with the crossover and most compression drivers. But if you feel that you need an in-between value, you can put together some variants as well. At any rate, the R1/R2/C1 influence is probably the most noticeable in the circuit, so changes made here are usually pretty audible.