Subject: Bypass capacitor calculation
Posted by Paul C. on Tue, 04 Oct 2005 19:53:28 GMT
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Wayne: In many of your crossover designs, and I have seen this in others, the very high SPL of the horn driver is used to advantage. A capacitor bypasses the resistor used to pad the HF horn driver, and is used to lift the high end roll off.I have done this my self, but it was a trial and error thing, trying different values and listening to what sounded right.How is the value for a high end bypass capacitor calculated? How do the padding resistors interreact?Paul C.

Subject: Re: Bypass capacitor calculation
Posted by Wayne Parham on Tue, 04 Oct 2005 21:03:17 GMT
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Model the circuit in Spice. The rising impedance of the tweeter's voice coil and the constant impedance of padding resistors makes a little bit of HF boost without any bypass capacitance. The crossover also interacts with the padding, because it sets the load, which determines filter Q.

point is boosted very slightly, to make an initial flat region before HF compensation begins.Compression drivers are typically flat to 4kHz or so, and then output starts to fall. Radial horns have constant directivity in the horizontal plane, but they have collapsing DI in the vertical plane. So, unlike pure (conical) CD horns, they have some acoustic EQ, but not as much as horns with collapsing DI in both planes. The bypassed padding arrangement is just perfect for these kinds of horns, especially if padding is somewhere between 6-12dB. It provides a complementary curve to the tweeter's response, so response is good on axis and uniform along the horizontal plane.