Subject: Re: 12Pi Push-Pull Drive
Posted by Wayne Parham on Mon, 22 Jun 2009 15:16:16 GMT
View Forum Message <> Reply to Message

The push-pull drive wires the drivers electrically out-of-phase, so cone motion is forward on one and backward on the other. They are then positioned in the horn so each provides positive pressure. In other words, the cone that is reverse-connected is also physically installed backwards.

You can see this in the plans - One driver is oriented so the front chamber and throat opening are on the front side, and the other has the throat on the back side. The wiring diagram shows the electrical reversal too.

This is done to reduce even harmonics. It works very well, as seen in the measurements. It just sounds cleaner and tighter. What is also very noticable is the absense of output below horn cutoff. It is very quiet below cutoff. Every other horn I measured, you could really hear a lot of sound even when the sweep was well below cutoff. The fundamental was very low, but distortion was loud. The harmonics were presented to the horn and amplified by it. Not so with push-pull drive, it's dead quiet, clean. This is one of the real eye openers, or maybe I should say ear openers. It is an easy-to-identify proof that the concept is working. Measurements are very useful, but this is something you can immediately tell even without a measurement system.

amount. At the lowest frequencies, the second harmonic is well inside the passband, so this is very important. Some might say 2nd harmonics aren't too objectionable, and I wouldn't argue but I would say it is better that they didn't exist. The front chamber and horn folds produce a low-pass filter function which tends to reduce third harmonics. Most of them are outside the passband. Fourth harmonics are canceled by push-pull drive and are even further outside the passband, as are all higher harmonics. So this design is as free from distortion as you can possibly get. I know