Subject: Using CSG to calculate displacement volume
Posted by Wayne Parham on Wed, 19 Aug 2009 15:30:03 GMT
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You can calculate displacement volume using a CSG estimate. CSG is constructive solid geometry and it's a term I borrowed from computer graphics that describes what I'm talking about. As an aside, I was a contributor in the POV-Ray ray tracing project, providing the support for the Inmos line of multi-processors. That's where my ray-tracing terminology comes from, but I was actually using this same process long before ever calling it "CSG" - There is a program called "volume.exe" in the original PiAlign distribution archive, and it was written in the 1970's. I used it as a simple calculator, allowing me to estimate volume offsets using a CSG approach.

Using a combination of primitive shapes (cylinder, wedge, cone, etc.), describe the parts inside the box. For example, a brace is a simple box so that one is easy - just calculate its volume using HxWxD. Write that down. To calculate a loudspeaker, simplify its shape as a cylinder (the magnet) and a cone (the basket and cone assembly). The formula to calculate the volume of the

measurements of your parts and calculate the volume offsets. You can go to whatever level of detal you want when estimating shapes, for example, you can use a single cylinder to estimate the magnet or if it has a bulge in the center, maybe you'll calculate as three cylinders. A horn may make be modeled as a wedge or a pyramid or a cone, or perhaps as a combination of several primitive shapes.