



## Project Scavenger – Still Goin' Deaf

*Origin: 2012\_0917*

*Last Edited: not applicable*

*\* all previous copies  
are null and void.*

### *Engineered Audio Design*



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## **Background**

Deafness is an acquired trait, requiring years of listening to badass-ier audio systems than those of your average Circuit City / Best Buy / Walmart backed weekend-warrior. In fact, if you want to go all in, you have to do just that – go all in, and devote an immense amount of time (and money – and resources) to the construction and maintenance of your beloved mode of transportation / bringer of deaf-ness.

This is a 2003 Dodge Ram ST (stick shift, 6 banger) that has had just about every modification and you could think of – including a 4 inch suspension lift. It originally, however, started life as a slightly dropped, street-savvy truck full of Audiobahn drivers and MTX Amplifiers. At one point, the bed was literally full of speakers.

Years gone by (8 actually), and the core system (in the cab) suffered the loss of an 81000D, and (without a readily available matching replacement) the opportunity to fill in some of the gaps arose. This was a chance polish an audio diamond.

This document will not go through the full redesign, but will specifically cover the design of a driver enclosure that is designed to perform at a level much higher than it has any right to. In the process of the redesign, one of the aforementioned 'gaps' was the unpleasant roll-off of a sealed driver (small sealed enclosure  $< 0.75 \text{ ft}^3$ ), in a small air space (standard cab truck), under high power (1400 watts RMS @  $< 2\% \text{ THD} + \text{Noise}$ ).

Ultimately, what Scavenger represents is a small, highly responsive, dynamic (wide functional bandwidth), high power enclosure that will fit (quite stealthily if all on its own) in a standard cab pickup truck or other tight space. Actually, it was designed so that you can fit two (yes two) of them in a standard cab truck, and still have room for a sound processing rack, power rack, and amplifier racking.

## Materials and Specifications

Driver = Audiobahn ALUM 10N dual 6 ohm transducer (circa 2002 - 2005)

\*\* all parameters are for 1 (one) driver.

\*\* this driver has not been made in at least 7 years.  
However, it has been replaced by the 2011 – 2012  
Audiobahn Sound Q ALUM 10H dual 2 ohm transducer.  
Thiele Small parameters are virtually spot-on, where the  
main difference between the two versions is simply the  
voice coil winding impedance and the rear basket aesthetic  
design.

\*\* any driver with the same / very (very very) similar  
Thiele Small parameters should be interchangeable.

### Driver Parameters...

Qts = 0.47  
Vas = 35.0 litres  
Fs = 26.40 Hz  
Re = 2.75 ohm (3 ohm nominal coil)  
Le = 2.50 mH  
Xmax = 26 millimeter  
Z = 3.00 ohm  
Qms = 4.90  
Qes = 0.51  
SPL = 95.60 dB (1 watt / 1 meter)  
Pe = 800 watts (effectively, this will correspond to RMS  
power rating)  
diameter = 276 millimeter (typical of a 10 inch cone)  
Sd = 33 millimeter<sup>2</sup> (typical of a 10 inch cone)

F (tune) = 37.30 Hz  
Enclosure volume = 0.9387 cubic feet (26.58 litres)

Enclosure construction = 0.75 inch nominal (0.018 meter) high density cabinet  
grade Baltic Birch plywood.

Enclosure assembly = 1.5 inch x 16 gauge air nailer, spaced at 3 inches between  
fasteners, and reinforced with wood glue meeting ANSI Type 1  
standard (Elmer's 'Max' Carpenter's Wood Glue or similar).

Port Inner Diameter = 1.00 inch  
Port Length = 4.00 inch (4.25 inch with dual flares, includes length of flared  
section)

Port Wind Speed = 13% speed of sound at sea level  
[ 0.13 Mach (~ 44 meters per second) ]

\*\* this will provide excellent 'anti-whistle', allowing the use of standard ports (flared ports not required).

Enclosure specifics...

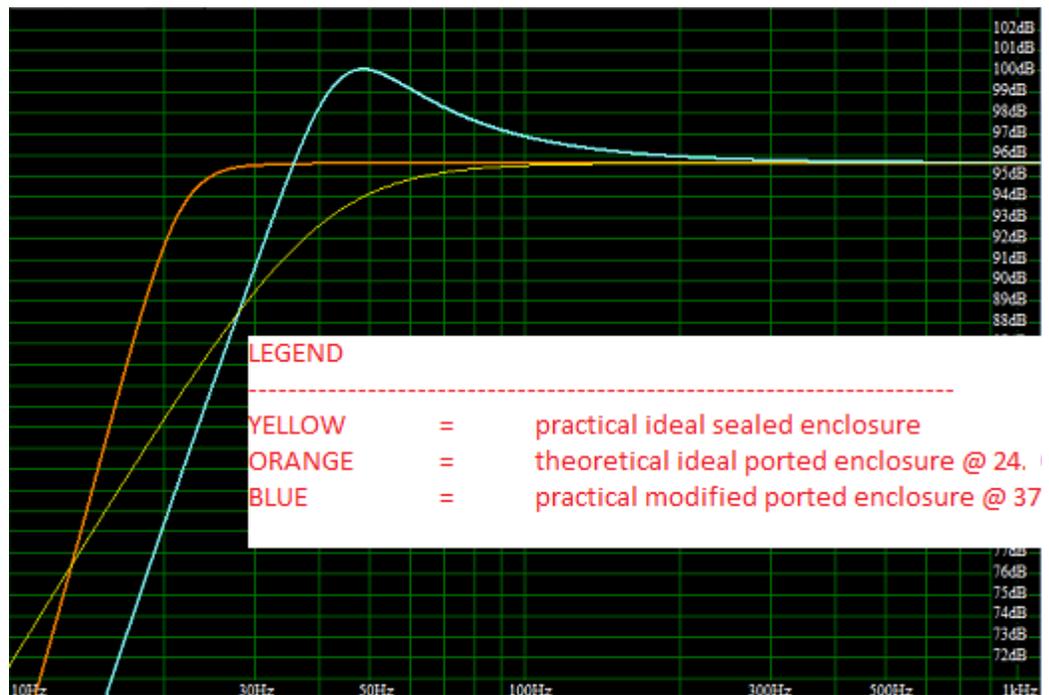
\*\* all dimensions in this subsection are *outer* dimensions

Width = 17.00 inches (0.4318 meter)

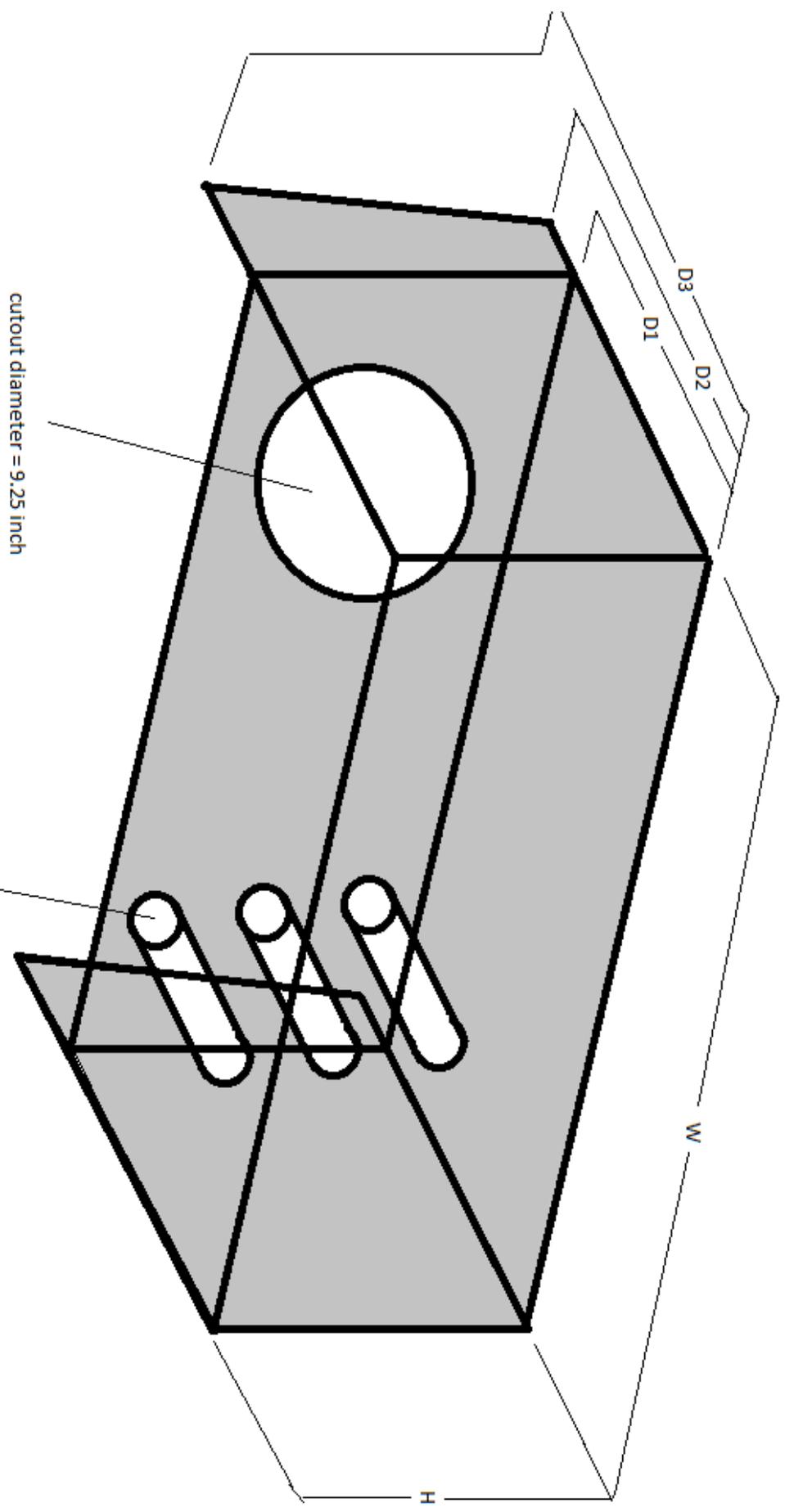
Height = 12.00 inches (0.3048 meter)

Depth = 11.25 inches (0.2858 meter)

Relative response curve @ 1w / 1m...



- D1 = 11.250 inch
- D2 = 12.625 inch
- D3 = 14.000 inch
- W = 17.000 inch
- H = 12.000 inch



cutout diameter = 9.25 inch

port inner diameter = 1.00 inch  
length = 4.00 inch (w/o flair)