



Stereo Integrity Mag v4 application guide.

Introduction:

The Stereo Integrity Mag v4 is a 12" dual 2-Ohm subwoofer designed to reproduce music with extreme fidelity and ultra-low distortion in a sealed enclosure while also providing lots of output. The following paper will outline what enclosure size is best for your Mag with various amounts of power.

Cautions:

Mag v4 subwoofers are easily capable of sound pressure levels in excess of 120 dB even with small amounts of power. Stereo Integrity is not responsible for hearing loss, hearing damage, and/or personal or non-personal property damage as a result of using the Mag v4 subwoofer.

Using the Mag v4 in a vehicle:

The Mag v4 was specifically designed to be used in 0.8 cubic feet to 1.25 cubic feet sealed enclosures in a vehicle.

Vehicles have transfer function, which is a boost in acoustic output below approximately 80 Hz. The lower the frequency, the more acoustic boost is gained. At 20 hz it is not uncommon to see a natural acoustic boost of 25 dB in a vehicle. As long as the F3 (the 3 dB down point of a subwoofer system) is in between 40 and 50 Hz, the in-vehicle response is usually flat down to 20 hz. The Mag v4 was designed to mate up to a vehicle's acoustics and provide a flat response down to 20 Hz in 0.8 cubic feet to 1.25 cubic feet.

Now, you may be asking "so which sized enclosure do I use?" Different enclosure sizes need to be used for different levels of amplifier power. Quite simply, the more power you have available, the smaller the enclosure needs to be. In sealed box applications, a smaller internal volume of air has a higher air spring which provides higher power handling. And vice-a-versa: larger sealed enclosures have less of an air spring which reduces power handling.

So based on power handling alone, if you have anywhere from 900 to 1000 watts of power you should use an enclosure size from 0.8 ft³ to 0.9 ft³ sealed. For 500 to 800 watts of power you should place the Mag in 1.0 to 1.25 ft³. And for power levels ranging from 250 to 500 watts, the enclosure can be as large as 1.5 ft³.

Enclosure size differences will also change the frequency response of the Mag v4. Larger enclosures will provide more extremely deep bass. Smaller enclosures will provide a flatter response (i.e. no exaggerated bottom end). Depending on how you like your music to sound you may need to adjust the enclosure size of the Mag to your liking.

Below is a quick reference of power handling and box sizes for the Mag v4:

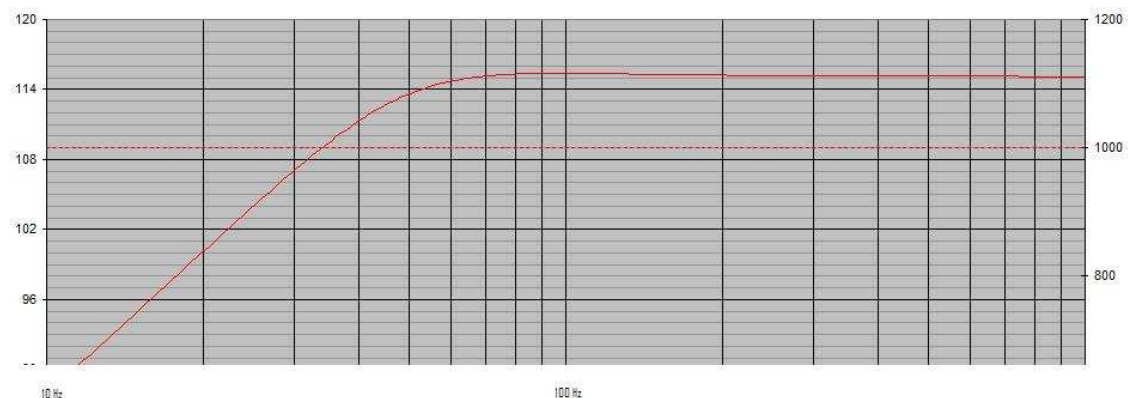
Box size	Power Handling
0.8	1000
0.9	1000
1	900
1.25	750
1.5	500

You do **not** have to put your Mag v4 in an enclosure size listed above because you have a certain amount of power. Remember that the chart above is of **power handling only!** If you have 500 watts and can only fit an enclosure that is 0.8 ft³, the Mag will still perform exceptionally well.

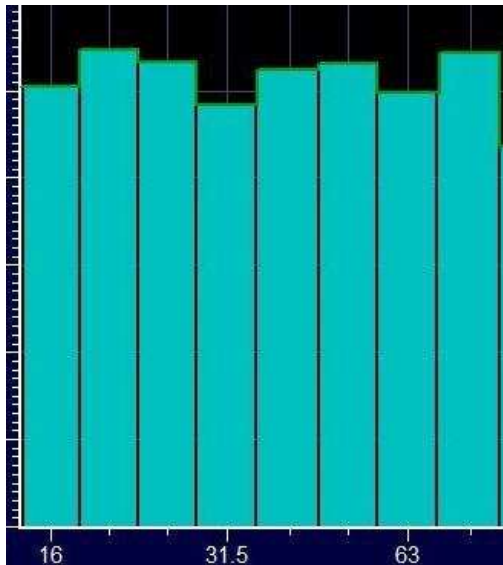
Next we will demonstrate how a modeled frequency response looks and how that same response looks when the subwoofer and box are installed in different vehicles. For measurements we used the XTZ room analyzer with USB-powered calibrated microphone.

First off we will take a look at two different enclosures for a Mag v4.

Here is a 0.8 cubic feet alignment modeled in an enclosure program:

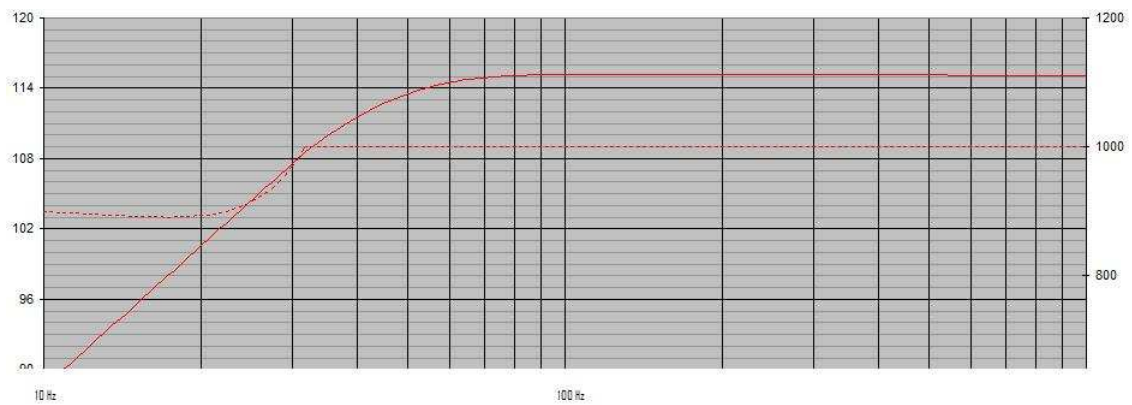


And here is that same alignment (0.8 cubic feet) in a Lexus SC400:

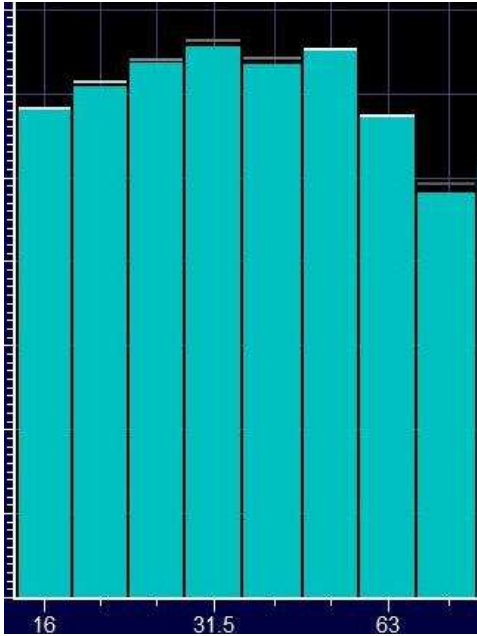


You can see the vehicle acoustic notches at 31.5 and 63 Hz, but other than those notches the Mag v4 is completely flat all the way down to 20 Hz. The F3 of this system is all the way down at 16 hz!

And here is a 1.0 cubic feet alignment modeled in an enclosure program:



And here is that same alignment (1.0 cubic feet) in a BMW 325i:



Taking this users crossover point of 63 Hz into consideration this system is solid down to 25 hz with an F3 of 20 hz with good output still extending to 16 Hz.