

CERWIN VEGA VMAX 12.4

Text and Photos by Dave MacKinnon – Of Sound Mind Labs

Believe it or not, it has been seven years since I first reviewed a Cerwin-Vega! Subwoofer – more ominous than that, the number of other products I've reviewed between then and now is even scarier. That number pales in comparison to how long Cerwin-Vega! has been disturbing the peace. It's been over 50 years. No, I haven't been alive that long, but most of my friends in the car audio industry have. Sorry guys, that was a low-blow.

So what has Cerwin-Vega! learned from their impressive 50 years of experience? They know how to build a great speaker, that's for sure. For this review, I have one of their new V-Max series subwoofers in the lab to be poked and prodded, and ready for a ride in the car. Let's check out the 12-inch VMax-12.4 sub.

DESIGN

The Cerwin-Vega! V-Max subs are designed to get your pulse pumping and your heart racing while leaving you enough trunk space for a two-four case of brews. Add to that the fact that they look freakin' cool, and we are off to a great start!

The dust cap of the 12.4 is injection-moulded polypropylene and sports an impressive aluminum finish that is half brushed with a large chrome-looking Cerwin-Vega! logo in the middle. The cone appears to be pressed paper – a very strong and well damped material. At the outer edge of the dust cap is a fat roll butyl rubber surround. This surround is one of the components that allows this driver to have a rated Xmax of 0.8 inches.

At the base of the cone is a 2.5-inch aluminum voice coil former around which is wrapped a four- >>



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▶ **The Cerwin-Vega! VMax-12.4 is based on an aluminum alloy die-cast chassis that wears a very cool silver powder coat finish. The six-spoke chassis features a foam rubber mounting gasket on the bottom and a rubber gasket on top. Mounting holes are drilled in a conventional eight-hole arrangement. The woofer requires 6-5/8 inches of mounting depth, but a little extra should be provided to let air move in and out of the vent in the bottom plate.**

CERWIN VEGA VMAX 12.5

layer copper voice coil. The winding height is 1-3/8-inches. Centering the voice coil former and providing compliance is a pair of 7-inch diameter progressive polyester / cotton spiders.

Providing power for the subwoofer is a pair of ceramic magnets, each measuring 6-1/4 inches across and a combined height of 1-1/2 inches. The top plate is machined steel that has been chromed, as is the bottom plate. Machined into the center of the bottom plate is a 3/4-inch vent. Additional cooling is provided by a series of vents in the basket, located beneath the spider mounting ledge. These also allow air pressure to be released from beneath the spider during high-excursion operation. A custom tooled rubber magnet boot keeps the sub looking clean and tidy and even extends the stylized vent slots down to the base of the driver.

Electrical connections are made to the dual voice coils via two pairs of spring-loaded terminals. The tinsel leads feature heat shrink tubing where they run from the terminals to the spider. They are then attached to the spider at the base of each of four of the rolls with lots of room for them to flex. This is, based on my experience, one of the optimum tinsel lead treatments – it doesn't drastically affect the spider stiffness and controls the lead motion well.

▶ **...the V-Max 12.4 produces more low-frequency output than I expected from this ported enclosure. I was mentally prepared for lots of 40-60Hz bass, but when the bass line of Prodigy's Firestarter came to life in the 30-40Hz range, so did the Cerwin-Vega! V-Max...**

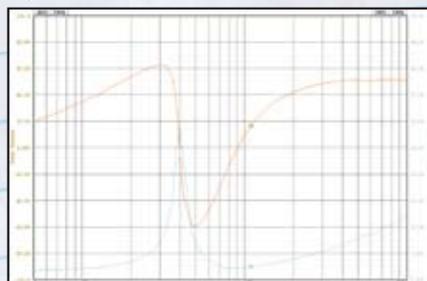
BENCH TESTING

I broke the woofer in overnight (~10 hours) using a high-voltage 22Hz sine wave to soften up the suspension. Once broken in, I connected the driver to my freshly (user) calibrated Woofer Tester 2 to measure the Thiele-Small parameters. **Figure 1** outlines my findings with dual 4Ω voice coils wired in parallel. **Figure 2** shows the impedance and phase graph of the woofer as measured by the Woofer Tester 2.

Figure 1
Small Signal Thiele-Small Parameters

R _{vc}	= 1.6276 ohms
Q _{es}	= 0.4887
Q _{ms}	= 7.5253
Q _{ts}	= 0.4589
L _e	= 1.4773 mH (at 1 kHz)
V _{as}	= 25.0888 L (0.8860 ft ³)
BL	= 13.2961 N/A
M _{ms}	= 213.2383 g
Efficiency	= 0.2999 %
Sensitivity	= 86.7883 dB @ 1W/1m
Sensitivity	= 93.7037 dB @ 2.83Vrms/1m

Figure 2



I then took these parameters and loaded them into Bass Box Pro 6 to run some enclosure simulations and look at the predicted response in the enclosure that Cerwin-Vega! provided for me. I must thank Cerwin-Vega! for the enclosure – I always ask for an enclosure to test subwoofers, as the subjective performance is often biased by the enclosure design and construction and it's nice that these guys listened to my request.

Cerwin-Vega! suggests two different enclosures in the owner's manual: a sealed enclosure with a net volume of 0.7 cubic feet and a vented enclosure with a volume of 1 cubic foot with a pair of 3.5-inch diameter vents, each 26 inches long. The enclosure they sent has external measurements of 24 x 14 x 14 inches. The provided enclosure nets out to exactly two cubic feet of air space tuned to 35.5Hz. The F3 is predicted at 30.6Hz – nice and low. **Figure 3** shows the predicted response of the supplied enclosure based on my T-S measurements. The

Figure 3



suggested enclosures require about half the trunk / hatch space, but the roll-off is 37.4Hz for the vented and 68.4 with a Q_{tc} of 0.5645 for sealed. **Figure 4** shows the predicted response of the suggested enclosures with the red line representing the sealed enclosure and the white line representing the vented enclosure. The supplied enclosure should really rock the house. >>

Figure 4



CERWIN VEGA VMAX 12.5

ON THE ROAD

I loaded the subwoofer back into the provided enclosure, headed out to my Subaru WRX sedan, connected it to a 1,000W DPX1001.1 amplifier and strapped it in to be safe and secure. The next morning, I started my audition during my drive to work. The first thing I noticed was that my car has some new rattles – how inconvenient. With respect to the task at hand, the Cerwin-Vega! V-Max 12.4 is, as it was designed for, well capable of giving you a solid slap in the back of the head. If I ended there, you certainly would get the wrong impression of this driver so, as always, details are necessary.

In terms of frequency response, the V-Max 12.4 produces more low-frequency output than I expected from this ported enclosure. I was mentally prepared for lots of 40-60Hz bass, but when the bass line of Prodigy's Firestarter came to life in the 30-40Hz range, so did the Cerwin-Vega! V-Max. It stayed controlled and musical, even at enthusiastic listening levels. Upper bass

"THE CERWIN-VEGA! V-MAX 12.4 CRANKED OUT AN EXTREMELY IMPRESSIVE (FOR MY CAR) 134.68DB AT 47HZ. THIS IS AMONGST THE LOUDEST SINGLE DRIVERS THAT HAVE MADE THEIR WAY INTO MY POOR TRUNK."

punch was above average, but not class-leading. Nevertheless, this is still a very good thing – I dislike subs with no snap to them, and on several tracks, was surprised by the dynamics of the Cerwin-Vega! V-Max 12.4.

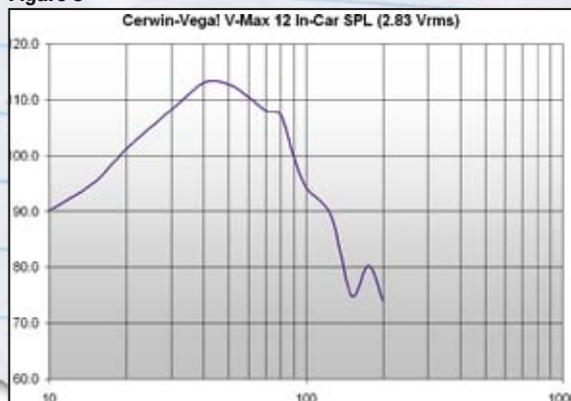
In terms of tonality, it was clear that this was a ported enclosure – it had some 'give' to it in terms of dynamics. That being said, I liked the balance of the Cerwin-Vega! V-Max for a street cruiser application – the "roll down the windows, crank

up your favourite beats" kind of creation.

Once I was done listening, it was time to make some measurements. **Figure 5** shows the in-car 2.83V reference SPL as measured by my Car Meter. It's interesting to note that the usual dig at 70Hz that my car exhibits was basically gone with this woofer, even though it was mounted in the usual location in the trunk behind the seat, facing the rear of the car. Once I was done playing with that, I set up my TermLAB USB, donned my

hearing protection and went to town looking for that illustrious magic number. The Cerwin-Vega! V-Max 12.4 cranked out an extremely impressive (for my car) 134.68dB at 47Hz. This is amongst the loudest single drivers that have made their way into my poor trunk.

Figure 5



CONCLUSION

I like the look of this sub – it's a clean and classic design. The powdercoating finish totally 'does it' for me, as does the monster surround. The sub was designed in the classic fashion of Cerwin-Vega! to hit hard and really slam! This is a classic 'roll the windows down' woofer designed to take a beating and give your senses a beating of their own! It also gets loud; very loud. If rattling windows is your game, check out the Cerwin-Vega! V-Max 12.4. **PBS**

THE SOURCE

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