Richter Wizard V

LOUDSPEAKERS

The Sydney Morning Herald's hi-fi columnist, Rod Easdown, says that Richter's Wizard is the biggest-selling Australian speaker in history. That's mostly because it's an excellent loudspeaker, but partly because it's been in continuous production for nearly 30 years, so the company's had a chance to sell a few.

And a bit like your great-great-grandfather's axe, which is a family heirloom despite having been fitted with multiple new heads and handles over the years, Richter's Wizard design has evolved so much through its five generations of existence that the current model bears almost no resemblance to the first one to roll off the production line 'way back in 1986.

Those five generations of existence have also seen at least five of Australia's finest loudspeaker designers injecting their expertise into its DNA. The current design is the result of a 'dream team' assembled by Richter's new owner, John Cornell. It's a team that includes physicist Dr Martin Gosnell B.E. (Hons) PhD, acoustician Brad Serhan (one of the designers behind Duntech and Orpheus) and industrial designer Russell Hobbs… plus, of course, John Cornell himself.

THE EQUIPMENT

The Richter Wizard V remains true to its heritage by being a two-and-a-half-way bass reflex design using dual bass/midrange drivers and a tweeter (a layout that's sometimes called a 'quasi' three-way because of the three drivers) but everything else is different to the models that have gone before: cabinet, crossover, drivers… you name it, and it's new on the Wizard V.

One of the biggest changes is that although it's a bass-reflex design, the Wizard V now comes with a foam bung that can be used, if desired, to reduce the level of upper

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bass and increase the extension of the deepest bass. The Wizard has always had 'peppy' bass… a characteristic that endeared it to most audiophiles, but was frowned on by a few, who regarded it as a populist approach to speaker design. Gosnell and his team have decided to appease the minority with this redesign, so that if you leave the rear-firing bass reflex ports unplugged you'll get the 'peppy' bass for which the Wizard is rightly famous, but if you insert the bungs, that peppiness will be replaced by a stately, more-measured delivery of the upper bass, with the added benefit that this alignment results in greater bass extension. That outcome just has to be a win-win in anyone's book!

No matter whether you choose to listen to the 'peppy bass' or the 'stately bass', it's being generated by two bass/midrange drivers that are new to Richter's inventory. Each one is 178mm in diameter overall and has a Thiele/Small (T/S) diameter of 130mm. (For some reason Richter's product brochure specifies the driver diameter as being "6-inches"—152.4mm—with the brochure's author seemingly having overlooked the fact that in 1988 Australia officially made the metric system the only legal system of measurement in Australia, but if you look more closely at the fine print in that brochure, you will also see that the company does at least list the 'effective piston diameter' metrically… at 130mm.)

The 'effective piston diameter' is the equivalent of the Thiele/Small diameter mentioned above, and is the number the aforementioned speaker designers would have plugged into their computers to calculate cabinet volume, bass reflex dimensions and so on. Manufacturers rarely state it, because it's always a much 'smaller' number than the most-often quoted overall diameter, and most manufacturers figure that the average consumer will always figure that 'bigger is better', so they do their utmost to oblige. (These same drivers are used in Richter's top-line Dragon, though since the Dragon is a true three-way design, it uses two of them exclusively for bass, and the third exclusively for the midrange.)

In a 2½-way design both drivers deliver the deepest bass, but the response of the lower-most of the two is deliberately rolled off at higher frequencies, leaving only the upper driver to deliver the midrange. So in a way, a 2½-way design is a hybrid between a two-way (comprised of a one driver that delivers both bass and midrange frequencies, and tweeter whose job it is to deliver the high frequencies) and a three-way (where one driver handles the bass frequencies, and another driver handles the midrange frequencies, leaving the high-frequencies for the tweeter).

The Wizard V's tweeter is also the same one that's used in the Dragon, a 25mm fabric soft dome unit.

The crossover inside a 2½-way design has three distinct sections, similar to a three-way network. The 'high' woofer is crossed to the tweeter like a regular two-way, but the '0.5' low woofer is rolled off at a much lower frequency. This arrangement has lots of advantages, including that acoustically the two woofers sum similar to a first-order crossover and since only the upper woofer reproduces the upper midrange/low treble, there is no comb filtering. Dispersion is also improved. The design doesn't only have technical advantages: It also has acoustic advantages because subjectively-speaking, good 2½-way designs are unfailingly reported by listeners as delivering a very spacious soundstage.

The deep bass of the Richter Wizard V is augmented by a bass reflex port located low down on the rear baffle that has a flared exit and is 90mm in length and 70mm in diameter. The speakers come with a foam plug inserted in each port, which you can choose to leave in place or remove, according to your preference, as discussed earlier in this review.

Dual gold-plated multi-way speaker terminals (so you can bi-wire or bi-amp or dual-amp), which are configured in a 'V-shaped' lay-out Richter developed for all its 'Series V' speakers, are located below the bass reflex port. Although the terminals are colour-coded for polarity (red for positive, black for negative) there is no writing on the terminal plate at all, nor any indication as to which terminals go to the high-pass section of the crossover and which go to the low-pass section… though, as you'd logically imagine, the uppermost terminals do in fact go to the high-pass section. (You'd imagine this would be logical, but we recently reviewed a pair of Rhyme speakers in which the opposite was the case!)

The cabinet is a new design for Richter, which has a front baffle that's 205mm wide and side walls that slant inwards as they go back to a rear panel that's only 150mm wide. These non-parallel cabinet walls help reduce resonances and internal standing waves, as well as improve frontal dispersion. (Those readers with long memories may recall that Richter used to achieve this by using curved side panels, but it would seem that the cost of doing this has now become too high, hence the 'wedge' shape to obtain the same end result, but at a lower cost.) The Wizard V cabinet stands just under a metre high (970mm) without spikes, but even with spikes it should

RICHTER WIZARD SERIES V
LOUDSPEAKERS

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Model: Wizard Series V
Category: Floorstanding Loudspeakers
RRP: $1,899
Warranty: Ten Years
Distributor: Richter Acoustics Pty Ltd
Address: PO Box 578 Hamilton NSW 2303
(02) 4962 1594
info@richter.com.au
www.richter.com.au

- Extended bass
- Superb midrange
- Tune-ability

- Limited finish options
- Sideways stability

LAB REPORT

Readers interested in a full technical appraisal of the performance of the Richter Wizard Series V Loudspeakers should read the LABORATORY REPORT published on page 96. Note that the results in the report, tabulated in performance charts and/or displayed graphically should be construed as applying only to the specific sample tested.

Lab Report on page 96

come in at less than a metre, so a pair won't overly dominate a room. Our review sample pair was finished in Black Oak, but you can also order them in a Jarrah veneer. The front baffle has a section 'dished' out of it to accommodate the grille, which results in a very nice clean look.

The footprint of the Richter Wizard V is quite elongated, so it's narrow from side-to-side compared to front-to-back. This means that its forward/backward stability is much higher than its sideways stability, such that cabinet will fall over if the top of the speaker is moved more than 12 degrees either way from the vertical. A larger base plate or an optional plinth (or outrigger feet) would easily solve this and it's something Richter could probably look into, either as a standard fitting, or as an option. However, because the base of the Wizard already has threaded steel sockets for spiked feet, it would be a very simple matter to make and add your own home-made plinths if you wished to do so.

IN USE AND LISTENING SESSIONS

I thought I'd start this section of the review with a little bit of hi-fi trivia regarding Richter's Wizard, because one of this design's 'claims to fame' (if you could call it that) is that it's the only Australian loudspeaker Australian design that's ever been copied, with the cheap 'knock-off' imitations being marketed under the name 'Lizard'. (To the best of my knowledge, the knock-offs are no longer on the market, but to be safe, you should make sure you buy only from an authorised Richter re-seller!)

Since my experience of Richter in the past is that I'd always liked the fairly forceful bass, I started my listening sessions without the bungs in place. Even from the very first track I played, which wasn't particularly bass-heavy, it was immediately obvious that the bass was a little forward, but not excessively so. However, as the listening session progressed, and I'd worked my way through a variety of music styles, I started getting the feeling that the bass was definitely a tad too forward for my personal taste and my particular listening room, which is nicely acoustically balanced in the bass department. So I inserted the bungs into the ports and did a quick re-listen to a representative sample of the tracks I'd played previously. Then, with the help of two henchpersons, each with a bung in hand, I did a more intensive and more accurate A–B comparison (bungs-in vs. bungs-out) of the Richter Wizard V's low-frequency performance. My considered conclusion was that my preference was for the bungs to be inserted.

How on earth has Richter been able to produce a speaker that sounds so good for such a low price?

First, there's a small but very satisfying increase in low bass extension with the bungs fitted, though this will likely only be easily evident to those who listen to orchestral works or to music in which a synthesiser or an organ figures intensively. More importantly, I thought the upper bass went from being a little forward, as I noted earlier, to instead being just a little 'light-on'. I was fine with the upper bass being slightly lighter than I like, but once I'd achieved this, the fact that the ports were closed off meant I was now able to move the speakers back closer to the rear wall, which then brought the level of upper bass up so it was, to my mind, perfect. The lesson here is that with the Wizards it will certainly reward you to experiment not only with the bungs, but also with room positioning both with and without the bungs: either way, you'll find the bass impressively deep. Having recently seen Blade Runner on the big screen (at one of the 'Flashback Sunday' screenings at Tuggerah Cinema) I listened to the entire Vangelis soundtrack using Richter's Wizard Vs. The brooding bass was delivered with almost the same depthy power I heard at the cinema, while the synth sound was even better than my cinema experience. And when I turned the volume up, the Wizards were happy to oblige, so there's no issue with their ability to handle power. On the flip side, they also sounded great with low-powered amplifiers, so if you want to use them with a low-powered stereo amplifier or with an AV receiver in a multi-channel system, feel free to go for it…

The balance of sound across the midrange was excellent, with all frequencies being reproduced at the correct level (which I confirmed by playing a recording of a chromatic scale being played back on a piano). This playback volume accuracy meant music was reproduced exactly as the performer(s) intended. Yet despite the accuracy of the balance, the overall 'feel' of the midrange tended towards being sounding rather full, or perhaps even slightly lush. Although I see-sawed between these two descriptions depending on the music I was listening to at the time, one description that never applied to the midrange was 'clinical.' Stereo imaging was excellent, with a nicely-resolved centre-stage and correct placement of instrumental images to either side. I was certainly rapt by the way the Wizard Vs delivered *Hollering Hearts*, from Josh Pyke's album 'But For All These Shrinking Hearts'. As the track builds, more and more instruments chime in, and the sound becomes bigger and bigger, and ever-more dynamic. The double-tracked vocal is particularly effective. I only wish Pyke hadn't borrowed the line '*Hope I don't die before I get old*' from Hilary Duff's cover version of The Who's classic song *My Generation*. (In the original, The Who actually sang '*Hope I die before I get old.*') For all that, Pyke writes lovely songs and has really interesting lyrics. I was particularly taken with *Someone to Rust With*. Not only did I like the music and the lyrics on Shrinking Hearts, I also liked the album's production values: lots of great sounds, beautifully assembled… and apparently all by Pyke himself in his own home studio, which makes his achievement all the more impressive.

High-frequency reproduction was certainly not lacking. Cymbals sizzled and there was a true airiness around all the highest-pitched sounds: the higher harmonics were delivered such that I never had to strain to hear them. Even the tinkling of a triangle sang through clearly. Overall the treble sound exhibited a delightful clarity. However despite this clarity, and the fact that it was audibly apparent that the high-frequencies were a tad forward in the mix, I would still not describe the treble as being 'bright'. However, since I had angled the speakers so they faced the listening position, I did see if I could affect the treble balance by re-aligning the cabinets so their backs were parallel with the rear wall, which meant I was now listening off-axis and to my mind, I found the slight reduction in the level of treble that resulted was more to my personal preference, so it's the speaker orientation I'd recommend if you want the high frequencies perfectly balanced against the midrange and the bass.

CONCLUSION

How on earth has Richter been able to produce a speaker that sounds so good for such a low price? Richter would no doubt invoke the Wizard's incantation, and say 'it's magic', but I tend to think that it's the new 'dream team' of designers that should be congratulated on a job very well done. As the saying goes… love your work! ***greg borrowman***

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LABORATORY TEST REPORT

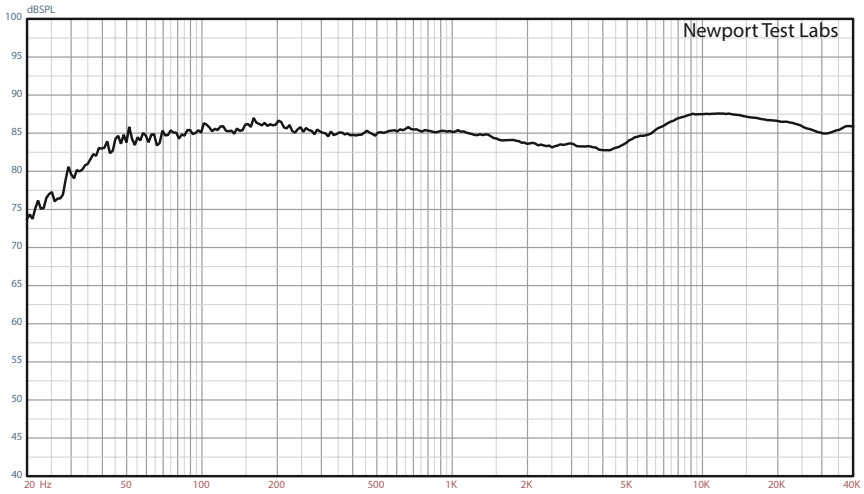
The frequency response of the Richter Acoustics Wizard 5, as measured by *Newport Test Labs*—and shown in Graph 1—extends from 35Hz to 40kHz ±3dB. That is a truly excellent result, particularly since you can see that above 30Hz the response is actually within ±2.5dB of reference and from 100Hz up to 1.5kHz, which is essentially the entire midrange, it's nearly ruler flat. Above 1.5kHz the response rolls off to be 2.5dB down at 5kHz after which it rises to +2.5dB at 9kHz, at which point it shelves out to 14kHz before rolling off to reference at 30kHz, after which there's a slight rise as it extends further out to 40kHz. It's obvious that the response of the tweeter extends beyond 40kHz, but this is the upper calibrated measurement limit of the test microphone.

High-frequency performance is shown in more detail in Graph 2, using a gated sine technique that delivers the response you'd measure if the speaker was in an anechoic chamber and you can see that the midrange response is now virtually flat right up to 3.5kHz, after which there's a sharpish –5dB dip at 5kHz followed by a rise to +5dB at 9kHz, where it stays out to 20kHz

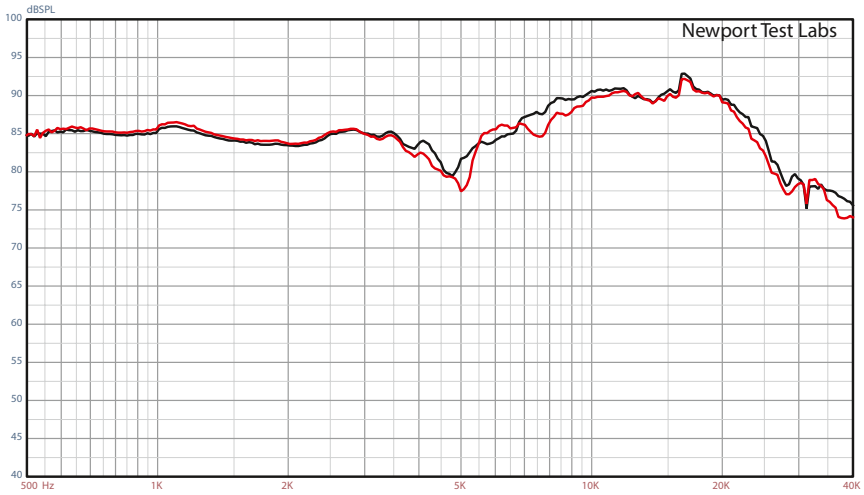
The frequency response extends from 35Hz to 40kHz ±3dB. That is a truly excellent result...

before rolling off. You can see that the response is marginally flatter without the grille fitted, but the differences are so small that they would not, in my opinion, be audible.

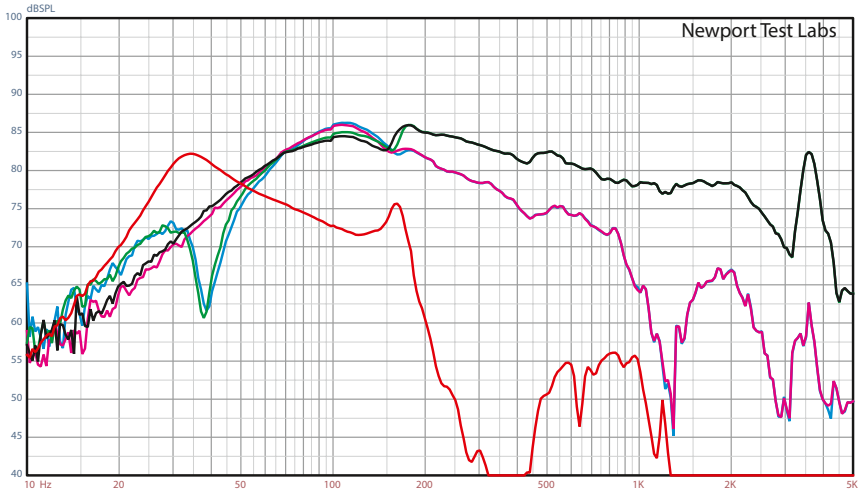
The graph showing the low frequency performance of the Richter Wizard V (Graph 3) is rather complicated, because *Newport Test Labs* has assembled five traces on the one graph, showing the response of the upper and lower bass/midrange drivers with and without the bung fitted to the rear-firing port, as well as the output of the port itself (without the bung, obviously!). Firstly, you can see that without the bung, you get the classic 'null' in the bass/midrange drivers' output, but it's rather lower than usual, at 38Hz. At the same time, whereas I'd normally expect the output of the port to be maximum at the same frequency, the maximum output of the Wizard V's port takes place a bit lower, at 34Hz. When the bung is fitted, you can see the frequency response of the bass/midrange drivers rolls off very smoothly (at 12dB/octave) below 100Hz. However it would appear that in designing a speaker that can be operated both as an infinite baffle design and a bass reflex design that some compromises have had to be made, so the output of the port has a resonance at around



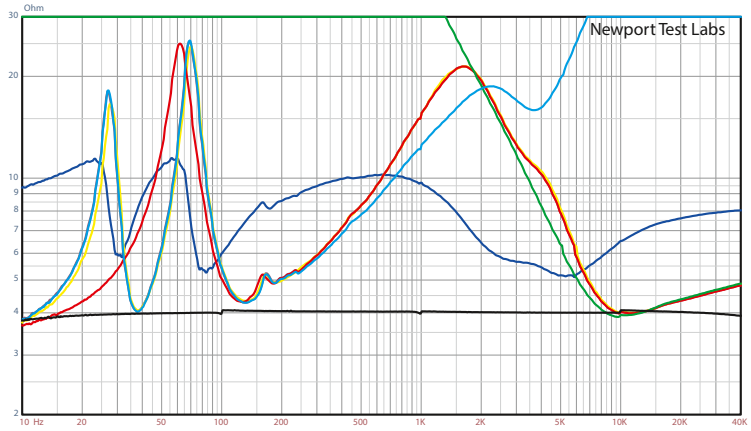
Graph 1. Averaged in-room frequency response using pink noise test stimulus. Trace is the averaged result of nine individual frequency sweeps measured at three metres, with the central grid point on-axis with the tweeter. [Richter Wizard V Loudspeaker]



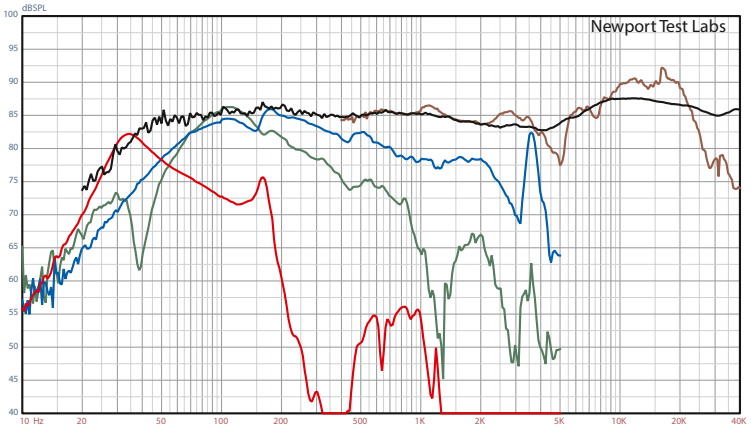
Graph 2. High-frequency response, expanded view, showing difference in response between grille on (red trace) and grille off (black trace). Test stimulus gated sine. Microphone placed at three metres on-axis with dome tweeter. [Richter Wizard V Spkrs]



Graph 3. Low frequency response of rear-firing bass reflex port (red trace), upper bass/midrange driver without bung (green trace) and with bung (black trace) and lower midrange driver without bung (blue trace) and with bung (pink trace). Nearfield acquisition. Port/woofer levels not compensated for differences in radiating areas. [Richter Wizard V]



Graph 4. Impedance modulus of left (red trace) and right (yellow trace) speakers plus phase (dark blue trace), high-pass section (green trace, and low-pass section (light blue trace). Black trace is reference 4 ohm precision calibration resistor. [Richter Wizard V]



Graph 5. Composite response plot. Red trace is output of bass reflex port. Dark blue trace is anechoic response of upper driver with port bung fitted. Green trace is anechoic response of lower driver without port bung. Brown trace is gated (simulated anechoic) response above 400Hz. Black trace is averaged in-room pink noise response. [Wizard V]

160Hz that has a small effect on the output of the bass/midrange drivers. The port is also delivering appreciable acoustic energy over an unusually wide bandwidth, extending from around 25Hz up to 160Hz.

Graph 4 shows the impedance of the Richter Wizard V, as measured by *Newport Test Labs*. It drops down to 4Ω at 10Hz, 48Hz and 10kHz, making this technically a 4Ω design, but for the majority of the audio band the impedance is 6Ω or more, so the Wizard V won't be difficult to drive. The pair-matching is excellent, which is demonstrated by the way the red and yellow traces track each other. These impedance traces also show that the cabinet is free of resonances, the only one being at 160Hz, as mentioned previously. The phase angle (blue trace) is not completely benign, swinging between +46° and –46° but perfectly controllable by any amplifier. You can see from the individual measurements made on the high- and low-pass sections of the Wizard V that the electrical crossover occurs at 2kHz, though the acoustic crossover appears to take place a little higher, judging solely from Graph 1.

Newport Test Labs measured the Richter Wizard V's sensitivity as being 87dBSPL at one metre, with a 2.83Veq input, using its standard stringent measurement technique. This result puts the Wizard V as having average efficiency, meaning even an averagely-powerful amplifier will result in satisfactory volume levels.

Overall, Richter's Wizard V is a very well-designed, well-engineered loudspeaker that returned excellent results in all the tests conducted by *Newport Test Laboratories*. ***Steve Holding***

A very well-designed, well-engineered loudspeaker that returned excellent results in all the laboratory tests

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